BUS Transportation

FEBRUARY

1956 • ONE DOLLAR

34th Annual Review of Industry Progress

Transit and Intercity figures—pgs. 26-29

What the Industry Spends—p. 32

The School Bus Story—p. 34

RUB-BUB TRANSPORTATION PRODUCTS

First in Safety . . . Last to Wear

Rub-Bub Heavy-Duty Safety Step Plate and Rub-Bub Heavy-Duty Safety Platform Plate

Represented in Canada exclusively by RAILWAY & POWER ENG. CORP

Rub-Bub Deserve Stanchions, Seat and Grab Rails

Rub-Bub Safety Aisle Tread and Safety Smooth Flooring

RUB-BUB® Transportation Products

SAMUEL MOORE & CO.

In Canada: Samuel Moore & Co. of Canada, Ltd.

When brakes Shudder public relations take a jolt!

Smooth, quiet braking is appreciated by riders and drivers alike.

Better brake maintenance or brake lining is the answer. Either way, American Brakeblok can help.

Our service engineers are experts on brake maintenance. And when it comes to a brake lining, you can't buy a better brand than American Brakeblok. For 25 years it has been the first choice of leading bus operators—both transit and intercity.

Their maintenance records prove that American Brakeblok costs less per mile. It lasts longer, wears slowly, evenly. It requires fewer adjustments. It protects brake drums. All benefits that keep operating costs down.

Let us help you get performance like this. Write today.

INSIST ON American Brakeblok for every heavy-duty application

Heavy-duty lining made in all sizes and types

NAPA

AMERICAN Brake Shoe COMPANY

AMERICAN BRAKEBLOK DIVISION EXECUTIVE OFFICES, Detroit 9, Mich.
Plants in Winchester, Va. • Cleveland, Ohio • Hillburn, N. Y. • Lindsay, Ont. • Gif, France

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A McGRAW-HILL PUBLICATION

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BUS TRANSPORTATION
(With which is consolidated Bus Age)

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Let us help you get performance like this. Write today.

INSIST ON *American* Brakeblok

Heavy-duty lining made in all sizes and types

for every heavy-duty application

AMERICAN Brake Shoe COMPANY

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BEST BUY
for every highway!

Purolator's PT-750 MICROPAK

now available for immediate delivery. Fits all Luberfiner Model 750 Series.

2 BASIC PRINCIPLES—exclusive with PT-750 increase efficiency ... save money.

1. Angular depth filtration (patent applied for): Travels the oil farther—gives utmost in engine protection.

Note: In addition to increasing depth and area of filtration, this method eliminates possibility of channeling.

2. Special FORMULA—PT filtration medium: Resin-impregnated cellulose, precision cut, forms basis of high-efficiency filter performance. This is confirmed by laboratory and bench tests as well as rigorous competitive road trials.

Call your Purolator supplier today

PurOlator
... first in filtration

PUROLATOR PRODUCTS, INC., RAHWAY, NEW JERSEY AND TORONTO, ONTARIO, CANADA

Whatever the
DESIGN...
we can make it
WATER-TIGHT!

Inland Self-Sealing Weather Strip—with the magic Filler Strip—simplifies the design job . . . makes the job of on-the-road or in-the-shop replacement fast, easy, positive. Gives new design freedom, too. The versatility of Inland Weather Strip means windows of any size, any shape can be quickly fitted with a positive seal against **any** moisture. The Filler Strip puts that needed pressure where it counts—**on the fence and the glass!**

Installation of Inland Weather Strip is a one-man job. It can be done in the shop or on the road—quickly, easily. No cement, clamps or binders . . . no need to plan intricate, expensive mounting surfaces, channels or moldings. Pocket the savings you realize on lower installation costs . . . or apply it to other features you'd like incorporated in your project.

INLAND
self-sealing weather strip
(PATENTED)

INLAND MANUFACTURING DIVISION
General Motors Corporation, Dayton, Ohio

a part of the General Motors Master Plan for Greater Highway Safety through Better Engineered Products!

THEY designed 'em...
WE made 'em water-tight!

Transportation Industry

Automotive Installations

Railway Equipment

Marine Applications

Over-the-road Equipment

Commercial Structures

Better protection against wear and rust

EVEN in winter-slushy weather, *Texaco Marfak* is miles ahead of ordinary lubricants in ability to give chassis parts long-lasting protection against wear and rust. This remarkable adhesive-cohesive lubricant *stays in* the bearings. Parts last longer, maintenance costs come down.

In wheel bearings, *Texaco Marfak Heavy Duty* gives extra thousands of miles of protection. It seals out dirt and road splash, seals itself in — assuring safer braking, longer bearing life. No seasonal change is required.

For those who want *just one lubricant* to handle *all* chassis, wheel bearing, water pump and other grease lubrication, there is *Texaco Marfak Heavy Duty Special* 2. This proven lithium-base, multi-purpose lubricant pumps easily at winter temperatures and lubricates effectively regardless of the thermometer. It resists water washing and stands up in severest service.

For engines—heavy duty gasoline or diesel—use *Texaco D 303 Motor Oil HD.* It assures top cleanliness, free rings for proper compression and complete combustion—*more power* with *less fuel* over *longer periods* between overhauls.

Transmissions and differentials run more smoothly, last longer when you lubricate with *Texaco Universal Gear Lubricant EP.*

A Texaco Lubrication Engineer will gladly help you get greater fleet efficiency and operating economy. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

MORE THAN 600 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

TUNE IN:
TEXACO STAR THEATER
starring
JIMMY DURANTE
on TV Saturday nights.
METROPOLITAN OPERA
radio broadcasts
Saturday afternoons.

TEXACO

Lubricants and Fuels
FOR THE BUS INDUSTRY

"Up to 275,000 miles before overhaul with Cities Service C-300 Motor Oil!"

"In 35 years in the bus business, we've never seen the match of Cities Service C-300 Motor Oil," says President Rudolph Weber of Berea Bus Lines.

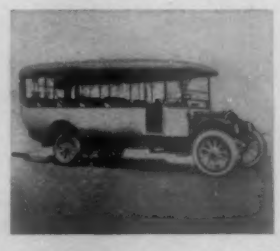
"With its high detergency, C-300 has enabled our 29 buses to roll up around 250,000 miles per unit before overhaul—and a couple even hit 275,000 miles!

"Moreover, we've received equally outstanding results with our other Cities Service Products, too—clean-burning gasolene, Trojan A Grease for wheel bearings, and Trojan MP Gear Oil.

"Our buses steer easily even on the coldest winter days . . . and as for loss of bearings, that's just unheard of with Trojan A Grease. Needless to say, I'd recommend Cities Service to any fleet operator."

Berea is one of an increasing number of bus lines that have found Cities Service gasolene and lubricants best suited to their operation. Have your local Cities Service representative demonstrate how he can help serve your fleet; or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

"Patience is Paramount when you carry 1400 kids to school every day," says Rudolph Weber. "Also paramount is safe performance—and in this, Cities Service lubricants play a big role."



First Berea Bus was this old model, used when firm started in business 35 years ago. Berea now has 29 buses, divides its business between school, commercial, and charter.

80,000 Riders Each Month—on Berea Buses to Cleveland. "Cities Service and good service go hand in hand," says a man with 35 years in the bus business—Rudolph Weber.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Now...moisture-free air for your air brake systems

New Wagner moisture ejection valve keeps reservoirs clean and dry—*automatically!*

If you've ever had moisture accumulation problems in the brake systems of your fleet, you'll be interested in this fully automatic moisture ejection valve.

Operating at 15 to 20 p.s.i. pressure, it ejects moisture with each average brake application.

It mounts in any convenient location ... no heating element is necessary as the valve cannot freeze in open (exhaust) position. It connects to the air system by two air lines—one leading from the bottom of the air reservoir and the other from a brake application line.

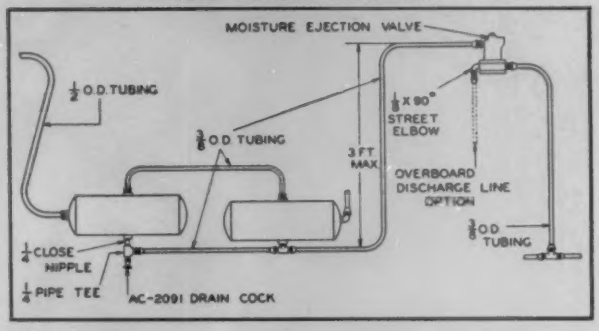
Expulsions occur without a noticeable drop in tank gauge pressure.

HIGH CAPACITY—valve can eject up to 4 fluid ounces at a time ... even expels foreign particles which may have settled to the bottom of the tank.

CORROSION RESISTANT metal parts. Diaphragms are a combination of neoprene and nylon cord for long life and high resistance to oil.

OPEN TO ATMOSPHERE—valve fluid cavities are open to atmosphere ... it is impossible to trap moisture within the unit. *Cannot balance in open position* ... and "dump" reservoir pressure.

TYPICAL PIPING DIAGRAM



Wagner Air Brake Application Valves for Straight Air Systems

These valves provide complete braking control for safe, sure stops. Each valve is completely interchangeable with other makes of valves. The basic valve can be installed by simply transferring the actuating mechanism to the Wagner valve. The treadle valve can be adjusted to angle properly with the contour of the floor board and also offers external adjustment of exhaust valve clearance.

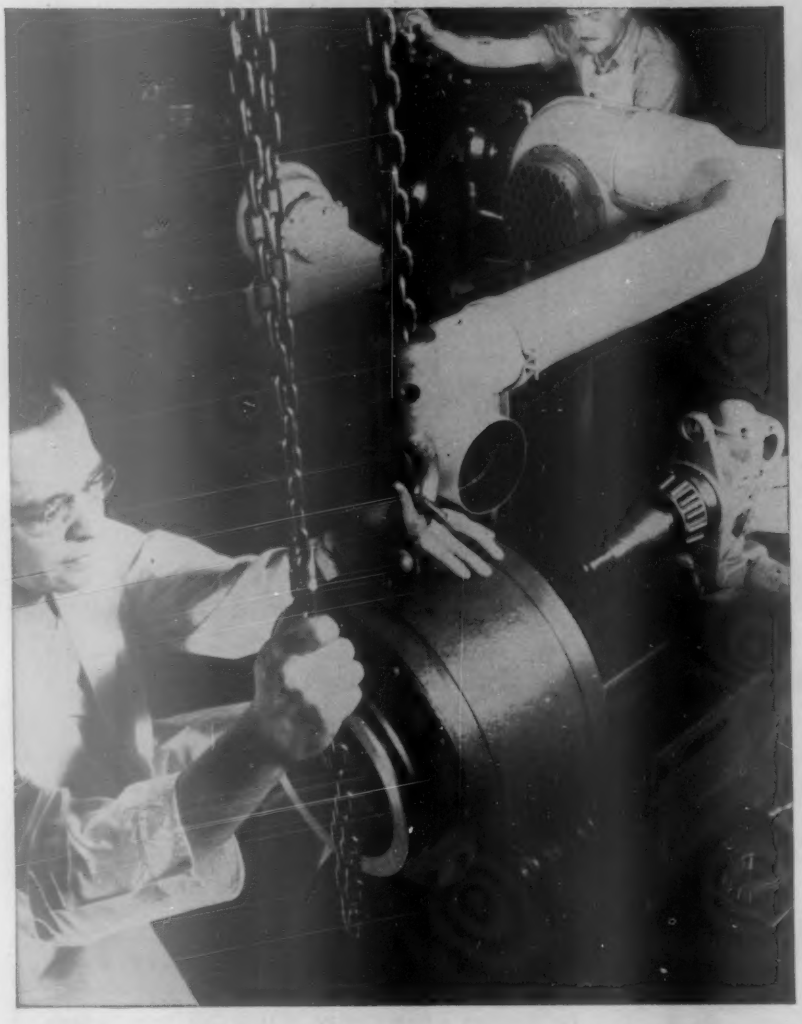
For complete information on Wagner Air Brake Systems, write today for Catalog KU-201A.

K56-2

WAGNER ELECTRIC CORPORATION, 6461 PLYMOUTH AVE., ST. LOUIS 14, MO.

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • HoRoL • CoMoX BRAKE LINING • AIR BRAKES • AIR HORNS • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

"Road-testing" tougher than any road assures longer TIMKEN® bearing life



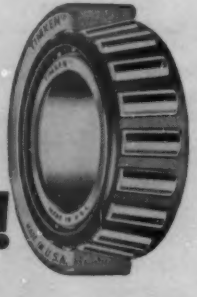
(Another reason why TIMKEN® bearings are first choice with bus manufacturers)

WORKING hand-in-hand with the bus industry solving basic design problems, we "road-test" bearing applications in our own laboratories. And we do it under simulated road conditions tougher than any encountered in actual service. Pictured here is a typical service test—running a front axle assembly under maximum driving loads. It tests the bearings themselves, compares seals and lubricants, shows bus and truck manufacturers how to get longer bearing life. It's one of the extra steps we take to make Timken® tapered roller bearings No. 1 for value.

No other bearing gives you all the advantages that Timken bearings give you: 1) advanced design, 2) rigidly controlled quality, 3) precision manufacture, 4) special analysis Timken steels. That's why Timken bearings are first choice with men who know buses best—bus manufacturers.

Why not take your cue from the manufacturers. Make sure the bearings you use for replacement carry the trade-mark "Timken". And send today for your free copy of "Timken Tapered Roller Bearings—Their Care and Maintenance". Write Dept. TB-2, The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

SINCE THEY'RE BEST WHEN THE BUS IS NEW, THEY'RE BEST FOR REPLACEMENT, TOO!



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬭ AND THRUST —⬭— LOADS OR ANY COMBINATION

A recent picture of Saginaw Street in downtown Flint, Michigan

retirement of last trolley coaches brings . . .

GM·DIESEL

fleet standardization

to Flint City Coach Lines

flexibility for expansion with a growing community . . .

Private automobile ownership in Flint is near the highest in the nation – 1 auto for every 2.8 residents vs 3.7 nationwide, 32% higher. Yet Flint City Coach Lines, by combining progressive management with the right transportation "tools," runs a *profitable* operation.

32% higher auto ownership... yet a successful bus operation...

Here's another company that's not waiting to use up book value of obsolete equipment before converting to Diesel power.

Flint City Coach Lines (formerly Flint Trolley Coach Co., and now a subsidiary of fast-growing City Coach Lines, Inc. of Detroit) will become a 100% GM Diesel operation next month when its last group of trolley coaches will be replaced by 51-passenger GM model TDH-5105's.

Immediate benefit will be the establishment of through service on two lines where shuttle service is now required, and introduction of a new cross-town line.

12% more route mileage

Diesel flexibility will enable the company to increase route mileage 12% without increasing the number of coaches in service, or decreasing present headways.

While the trolley coach fleet averages less than 9 years old, much of it undepreciated, potential

In big letters, this operator capitalizes on the ride appeal of Air Suspension. The 20 Air Suspension-equipped units have now been operated over 1,400,000 miles without a single bellows or leveling valve replacement.

Standardization on one make of coach will improve shop efficiency. This "assembly line" can wash 20 coaches an hour, and all coaches are washed every day. The system operates 25 TDH-4507's, 7 TDH-4509's and 20 TDH-5105's, with 18 more to come in March.

with GM DIESEL flexibility...an end to shuttle service

savings are so great that the conversion, by reducing investment, providing greater flexibility, plus shop standardization, will more than offset this loss, at the same time improving service for Flint riders.

Inventory savings

At present mileage, substitution of Diesels will result in a fuel saving of more than $14,000 annually. Inventory investment will be cut 23%. And the company will also be at liberty to relinquish its use of 6 turnarounds.

More liberal depreciation schedules now allowed on purchases of new equipment will also result in higher retained earnings.

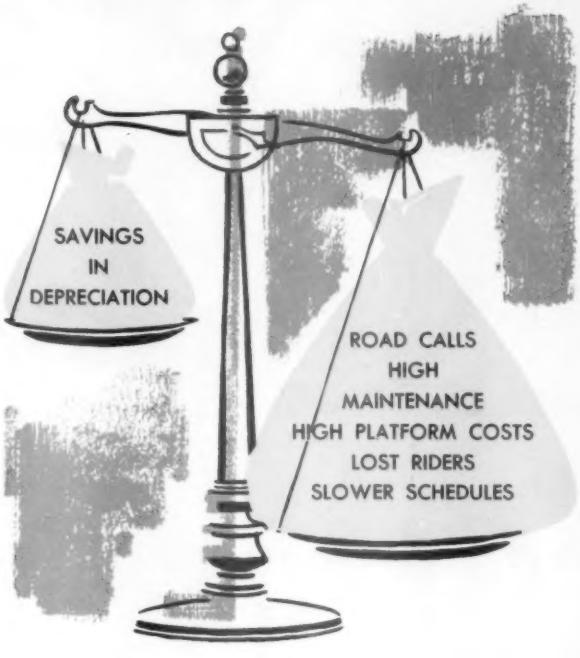
Mr. Manferd Burleigh, City Coach Lines President and General Manager states: "The Flint conversion, with its essential savings, is part of our program for GM standardization on all our properties, which serve Grand Rapids, Michigan; Evansville, Indiana; Jacksonville, Florida; Greenville, South Carolina; Charlotte and Winston-Salem, North Carolina."

Removal of trolley wire in downtown Flint will enable the city to re-locate its traffic lights centrally over the streets – contributing to safer vehicle movement.

During layovers, drivers phone in passenger counts in Flint's unique system of keeping the Dispatcher's office up to the minute on riding levels.

expense dollars or **investment dollars . . .**

which kind are you paying out?



You may be shying away from investing in new coaches, but chances are you are already paying for them in the high cost of keeping obsolete, uneconomic equipment in service.

And besides costing more for maintenance, old coaches require more road calls (aggravating passengers, losing riders) . . . they repel marginal riders with other traveling alternatives . . . require more spares . . . create problems in securing parts . . . discourage maintenance crews.

Instead of paying out these "expense dollars," "investment dollars" put in new equipment will build an equity for you . . . keep the money in the business.

Since GM equipment will return more than depreciation cost, your net income will also be higher.

Like any other industry, bus operators need the most up-to-date "tools" they can buy to earn a profit today.

GM GENERAL MOTORS COACH

GMC TRUCK & COACH DIVISION
GENERAL MOTORS CORPORATION

PRINTED IN U.S.A.—2-58

DALLAS *Again Specifies*

VICKERS® HYDRAULIC POWER STEERING

30 MORE "SOUTHERN COACHES"

Make a total of 125 buses used by Dallas Railway and Terminal Co. having

VICKERS HYDRAULIC POWER STEERING

Vickers Hydraulic Power Steering Booster does the actual work of steering. All road shock is absorbed by Booster and transmitted to vehicle frame . . . there can be no kick-back at the steering wheel.

Engine-driven Vickers Pump supplies power for steering. Optimum radial and axial running clearances are automatically maintained, resulting in high efficiency and long, trouble-free life.

VICKERS *hydraulic*
POWER STEERING
is Effortless, Positive and Shockless

7198

WELL PLEASED with the performance of Vickers Hydraulic Power Steering on 55 of their buses already in service in 1953, the Dallas Railway and Terminal Co. specified Vickers on 40 additional buses bought from Southern Coach Manufacturing Co. at that time. This year they have taken delivery on 30 more Southern Coaches . . . again specifying Vickers.

Mr. J. T. Hurry, Superintendent of Equipment for the Dallas property, writes: "The oldest of these jobs have nearly 150,000 miles on them. These Vickers units have given very satisfactory service and to date we have not had to rebuild any of them due to wear."

Vickers Hydraulic Power Steering is durable, dependable, safe, easy . . . takes the fatiguing steering load off the driver and increases his efficiency. The quick maneuverability is especially useful in city traffic. Improved public relations result from the ease with which the driver gets close to the curb for loading. Easily applied to new and existing vehicle designs. Ask for Bulletin M-5106.

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
1408 OAKMAN BLVD. • DETROIT 32, MICH.

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ATLANTA • CHICAGO AREA (Brookfield) • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES AREA (El Segundo) MINNEAPOLIS • NEW YORK AREA (Summit, N.J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) • PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON WORCESTER
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

FLEET OWNERS REPORT MULTI-LUBER EXTENDS INSPECTION TIME UP TO 150,000 MILES!

Multi-Luber
POWER LUBRICATION SYSTEMS

Fleet owners know that *keeping 'em on the road keeps profits up!* That's why they're all installing Lincoln MULTI-LUBER... the *automatic* power lubrication system that increases operating efficiency and cuts maintenance costs.

One fleet owner reports savings up to 90% per single overhaul... has more than doubled the miles between fleet inspections. But that's not all! You actually *save six ways* with a *low-cost* investment in MULTI-LUBER:

1. **MULTI-LUBER** provides the simplest, most dependable method for positive, periodic lubrication of all bearings simultaneously, *while equipment is operating.*

2. **MULTI-LUBER** increases operating efficiency of equipment to a uniform maximum.

3. **MULTI-LUBER** eliminates man-hours and equipment down-time required for conventional chassis lubrication.

4. **MULTI-LUBER** increases service-life of bearings and moving parts... reduces cost of replacing bearings damaged due to inadequate lubrication.

5. **MULTI-LUBER** reduces stocks of replacement parts.

6. **MULTI-LUBER** prevents waste and contamination of lubricant.

A SALUTE TO MISSOURI PACIFIC TRANSPORTATION COMPANY

... now installing Multi-Luber on all cross-country and pool service buses. Mr. R. C. Cheatham, Supt. of Automotive Equipment, reports that Multi-Luber has increased service-between-overhauls 50% plus.

NOW THREE TYPES OF Multi-Luber* SYSTEMS TO MEET ALL YOUR REQUIREMENTS

AIR-OPERATED... Designed for use wherever compressed air is available as motive power. Applications include *Trucks, Trailers* and *Buses* equipped with air brakes. May be actuated automatically (for example, with every brake application) or manually at the operator's discretion.

VACUUM-OPERATED... Ideal for equipment ranging from *light trucks* and *automobiles* to *fork-lift trucks*. Installation for manual or automatic operation. Where manual actuation is preferred, as on vehicles equipped with hydraulic brakes, a control panel is provided... with push button and signal light to indicate completion of the cycle.

MANUALLY-OPERATED... Designed for use where neither compressed air nor vacuum is available. Applications include *Farm Implements* and electrically driven *Fork-Lift Trucks*. At the push of the handle, an exact amount of lubricant is applied to each bearing.

*Registered Trade Name

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IMAGINATION FOR AUTOMATION

LINCOLN ENGINEERING COMPANY
5701 Natural Bridge Ave., St. Louis 20, Missouri

Please send me my free copy of Bulletin 528 giving complete details on Lincoln *Automatic* Power Lubrication Systems.

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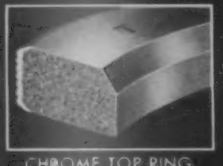
OVER 300 FLEETS ALREADY USING THE LINCOLN MULTI-LUBER
NATIONAL SALES AND SERVICE THROUGH LEADING WHOLESALERS

For fast break-in and utmost oil economy be sure to get...

Sealed Power KromeX RING SETS

CHROME at its best

Road-tested for millions of miles! Praised by mechanics everywhere! Solid chrome faces on top and bottom rings mean double life for all rings. For finest performance, get KromeX!


CHROME TOP RING

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CHROME OIL RING

ALL MAJOR ENGINE BUILDERS USE SEALED POWER PARTS!

For top performance in trucks, buses and tractors be sure to get....

Sealed Power SLEEVE ASSEMBLIES

OF HIGHEST QUALITY FACTORY-FITTED PARTS

There's extra service and extra satisfaction in Sealed Power Sleeve Assemblies, with sleeve, piston, piston pin, and rings all specially engineered for each application, and factory-assembled for finest performance. The finest combination for truck, bus, and tractor owners who are careful about costs!

GET IT FROM YOUR JOBBER

SEALED POWER CORPORATION, MUSKEGON, MICHIGAN

Sealed Power Piston Rings

BEST FOR RE-RING! BEST FOR RE-BORE!

Ask for Sealed Power Pistons, Cylinder Sleeves, Piston Pins, Valves and Water Pumps

Sensational "Fast Action"

WEAVER LO-HI-DRAULIC JACKS

enable shops to service buses in less time — with less effort

Easy does it-
THE WEAVER WAY

"Quick-Lift" Lever speeds lifting!

AS HAND LEVER permits operator to see as he spots saddle under axle.

AS FOOT LEVER raises saddle quickly to load. Lifts light loads without use of handle. Ideal for operation in cramped quarters.

Take advantage of the extra convenience and operating ease of Weaver Lo-Hi-Draulic Jacks to speed up bus maintenance and keep costs under control.

These Weaver Jacks offer such time-saving, effort-saving features as the "Quick-Lift" Lever . . . spring-balanced handle that operates on any phase of stroke . . . ball-bearing wheels and casters for easy maneuverability . . . long, low tip-proof frame to reach remotest spotting points . . . cupped saddle that can't slip . . . 24" lifting height for easy wheel clearance . . . safety devices to prevent overloading or accidental lowering.

The Model WA-75 Lo-Hi-Draulic Jack shown has full 10 ton lifting capacity to handle heaviest vehicles. Other models of 2-ton and 4-ton capacity are also available. See them at your Weaver Jobber today or write us for Bulletin BT-461.

WEAVER

WEAVER MANUFACTURING CO., SPRINGFIELD, ILL., U.S.A.

SERVICE SHOP EQUIPMENT

Complete Weaver line includes: Twin Post Lifts . . . Single Post Frame Type Lifts . . . Unit Lifts . . . Bumper Lift . . . Car Washers . . . Wheel Alignment Equipment . . . Headlight Testers . . . Brake Testers . . . Wheel Balancing Equipment . . . Jacks . . . Wheel Dollys . . . Air Compressors.

7 WAYS TO DECREASE DOWN-TIME . . .

THERMOID BRAKE BLOCKS

are engineered to meet the most rigid stopping tests, while providing maximum mileage, regardless of heat or operating conditions.

NEOPRENE-NYLON AIR BRAKE DIAPHRAGM

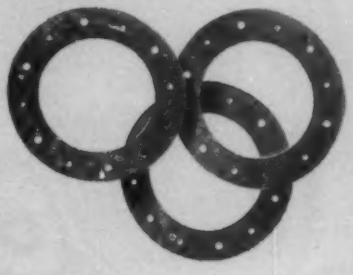
provides maximum protection against oil, abrasion, heat . . . stands up under flexing . . . resists "ballooning". Gives you more revenue miles between overhauls.

BT NEOPRENE RADIATOR HOSE

withstands 100° higher outside temperatures than ordinary hose . . . provides 4 times greater resistance to oil, grease and gas fumes.

HEAVY DUTY BRAKE LININGS

compounded under Thermoid's exclusive Dry Mix Process, have a *density* that makes them wear longer in the most severe service.



CLUTCH FACINGS

manufactured to the same industry-leading standards as Thermoid Brake Blocks and Heavy Duty Linings, provide smooth, positive engagement.

HEAVY DUTY HYDRAULIC BRAKE FLUID AND PARTS

withstand the toughest conditions. Thermoid HD Fluid meets or exceeds all SAE requirements. Brake Parts and cylinder assemblies are precision engineered for complete dependability and long life.

FAN BELTS WITH NEOPRENE COVERS

resist high under-hood temperatures, abrasive road dirt, oil and grease. *Prestretching* prevents sagging and premature wear.

Test these Thermoid products on the toughest job in your fleet!

Thermoid

Thermoid Company • Trenton, New Jersey

Brake Linings • Fan Belts • Radiator Hose • Hydraulic Brake Parts and Fluid • Car Mats • Clutch Facings • Thermoid Precision Process Equipment.

FOR GREATER PASSENGER *Appeal...*

The New BECK

● Independent Tropic-Aire Carrier "PROVEN" Diesel Powered Air Conditioning.

● Recent delivery of one of a fleet of 35' DECK AND HALF coaches to Estrella de Oro, Mexico City.

★ FOR INCREASED REVENUE
★ OUTSTANDING PERFORMANCE *and*
★ LONG RANGE ECONOMY

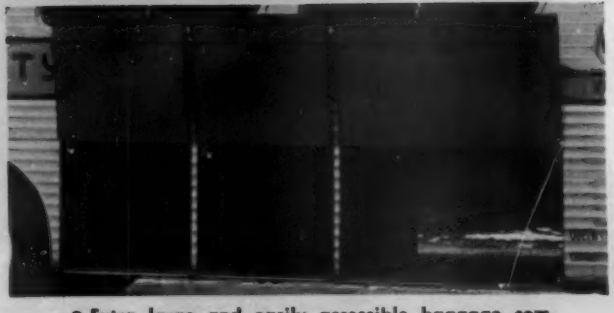
The first of the new 41 passenger "SEMI" DECK AND HALF coaches was delivered to Queen City Trailways, Charlotte, North Carolina in December. Outstanding results in passenger appeal have been reported since this unit was placed in service. Important standard features incorporated in this coach are the new "SEMI" DECK AND HALF DESIGN; The "Airglide" air suspension ride; passengers comfortably seated in the new Ultra Modern National reclining seats; a new conception of interior trim; Edwards aluminum "kick-out" sash; full fluted anodized aluminum paneling; wrap-around rear windows; full wrap-over upper deck windshield; Sunshade Solex glass throughout; and exceptionally large baggage compartments.

C. D. BECK & COMPANY, INC.,

41 Passenger "SEMI" DECK AND HALF

The 41 passenger "SEMI" DECK AND HALF coach is powered with the 175 HP Cummins Turbocharged Diesel Engine. All Horsepower goes into the road performance of the coach, resulting in fuel economy that contributes to lower operating and maintenance costs. All year around air conditioning is assured by the independent diesel powered Tropic-Aire Carrier air conditioning system which has been proven through years of satisfactory service. Remember, in air conditioning, only the best is good enough.

• WRITE, WIRE OR PHONE
for complete detailed specifications, photographs or demonstration.



• Extra large and easily accessible baggage compartments.

• Since 1950 Queen City Trailways has successfully operated BECK DECK AND HALF equipment. Above is one of their newest 45 passenger 40' coaches.

SIDNEY, OHIO, U.S.A.

Durable uniforms of "DACRON" and wool are lightweight . . . give you extra miles of neatness

Long hours behind the wheel needn't spoil the neat, crisp appearance you want drivers to maintain. With lightweight uniforms of "Dacron"* blended with wool, they'll keep looking neat all day long . . . with trousers neatly pressed and jackets with practically no wrinkles—even in the rain! "Dacron" polyester fiber helps these uniforms give extra-long wear, too, through months of rugged service!

Savings start from the day uniforms of "Dacron" and wool join your busline. Maintenance is easy and economical, since fewer pressings are required and many spots can be easily removed at home. Durable and comfortable, these uniforms earn their way by cutting replacement costs!

Get all the practical features you need in uniforms by asking your supplier for tropical weight uniforms of "Dacron" blended with wool. They have the appearance and performance every driver wants!

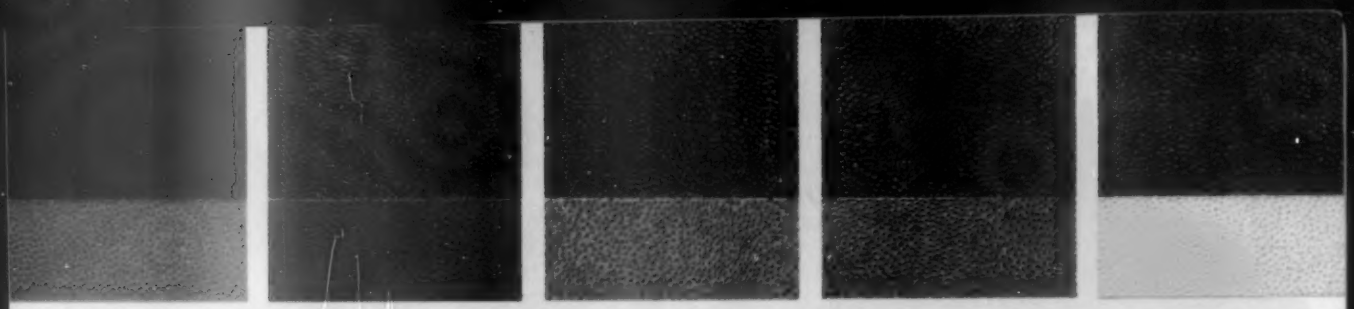
DACRON
REG. U.S. PAT. OFF.

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Textile Fibers Department
Wilmington 98, Delaware

*"Dacron" is Du Pont's registered trademark for its polyester fiber. Du Pont makes fibers, does not make the fabric or uniform shown here.



Your coaches will look custom-made with smart, new American Seating colors! Here are just a few of the attractive combinations possible. Easy-to-clean vinyl-coated fabric—with nylon-sewed seams—stays bright and new-looking, delights patrons.

CUSTOMIZE YOUR COACHES WITH COLOR!

. . . in American Seating bus seats — choice of 193 cities in the United States and Canada!

Now add more passenger appeal to your buses with new American Seating bus seats . . . select from seven new, decorator-tested colors—combine them to blend with your own color scheme!

Beneath the beauty, you'll find famous American Seating comfort, and rugged durability — the kind of top quality that assures years of economical, trouble-free service; makes American Seating bus seats the choice of 193 cities in the United States and Canada. Our catalog shows the complete American Transportation Seating line. Send for your free copy today!

American Seating city-service bus seat in Houghton Gray and Ionia Coral. Frame and aisle legs are color-keyed to upholstery. Grab rail is chromium plated from aisle to bus wall.

AMERICAN SEATING

Grand Rapids 2, Michigan. Branch Offices and Distributors in Principal Cities. Manufacturers of Transportation, School, Theatre, Auditorium, Church, Stadium Seating, and Folding Chairs.

WORLD'S LEADER IN PUBLIC SEATING

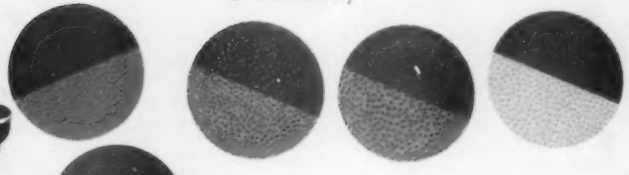
ENJOY DAY-LONG COMFORT IN THE ALL-NEW AMERICAN DRIVER'S SEAT!

New Model 300 offers easier seat adjustments, new safety and durability . . . gives you the comfort-support of full-depth foam rubber . . . comes in a wide choice of color combinations!

Here's a brand-new standard for all-day driving comfort — the all-new American Seating Model 300 Seat!

Front edge of comfortable foam-rubber cushion is shaped for best leg support. Contoured side wings of foam-rubber back offer greater safety, help to keep driver in seat on turns. The Model 300 is adjustable fore and aft, up and down; cushion and back are also adjustable. What's more, attractive two-tone color combinations are available to give buses a custom-tailored look!

For comfort, safety, durability — and economy — ask for American Seating Model 300 next time you order. Call your American Seating man, or write us direct, for full details today!



Smart, new color combinations step up bus appearance, please patrons. Choose from vinyl-coated fabric or genuine leather — perforated for ventilation.

Wide, full-depth foam-rubber cushion and adjustable back assure driving comfort, posture support.

Just raise cushion, then release side plate (arrow). Unique adjusting device makes adjustment automatically.

The back is higher for better support — tapered for elbowroom on turns.

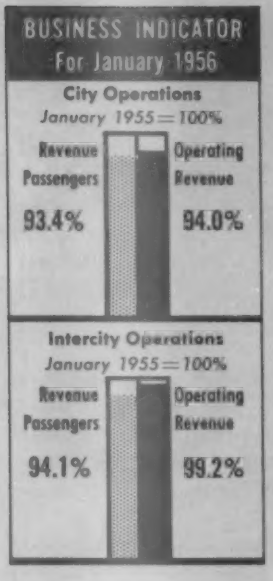
AMERICAN SEATING

Grand Rapids 2, Michigan. Branch Offices and Distributors in Principal Cities. Manufacturers of Transportation, School, Theatre, Auditorium, Church, Stadium Seating, and Folding Chairs.

WORLD'S LEADER IN PUBLIC SEATING

Top Topics

BUS Transportation



Tax relief is essential, although it's no panacea, Benjamin F. Feinberg, chairman of the New York Public Service Commission, told a transportation management meeting last month, as he called for relief for bus operators from the state's two and a half per cent gross receipts tax.

The character of the bus industry has changed from a monopoly to a highly competitive and vulnerable business, Feinberg said, and some taxes no longer apply to the industry.

Meanwhile, New York Governor Harriman delayed recommending tax relief in his budget message, citing technical and legal complications. He said, however, that a separate recommendation would be forthcoming.

New York Senator George T. Manning whose article on taxation appeared in last month's issue of Bus Transportation has rung a bell in the bus industry.

Reprints of the article are being distributed by the American Transit Association to each of its transit company members, while other associations are distributing from 50 to 300 copies to members and public officials. All told, 2500 reprints are being sent out. Among the associations are NAMBO, Illinois Bus, New Jersey Motor Bus, Trailways, Virginia Passenger Bus and Texas Motor Bus. Continental Trailways will distribute some 5,000 copies of the tax article.

At the same time, Bus Transportation is sending reprints of another article – a forecast for 1956 by industry leaders – to mayors of every American city with a population of 10,000 or more.

Greyhound is seeking permission from the Interstate Commerce Commission to issue up to 350,000 shares of $3 par common stock which would be sold to top employees under a stock option plan. The company would grant options until 1960 in amounts up to 25,000 shares for each individual, based on the fair market value of the company's common stock on the date of the option.

In another ICC action concerning Greyhound, an ICC examiner has recommended against the purchase by the bus company of a competing route of the Boston and Maine Transportation Co. Purchase of the route, from Boston to Portland, Me., is being fought vigorously by Trailways.

A local stockholders' group has obtained control of the Cincinnati Transit Co. with the purchase from American Transportation Enterprises of 40,000 shares of stock. The group is headed by Lloyd Miller, a stock broker who has been on the company's board of directors for the past six years.

Price of CTC stock was estimated to be $7 a share, and it is believed that the purchase brings to 120,000 the number of shares held by the local group.

Continued on next page

Top Topics (Continued)

No immediate plans were announced for changes in either personnel or policy, but a meeting of the board was scheduled for Feb. 10.

Meanwhile, Wilbur R. Kellogg, former Cincinnati city manager who became CTC's president two years ago in his only transit venture, died after a long illness. He was 71.

Strikebound Capitol Transit Co. of Little Rock, Ark., has given up its franchise and will be replaced by a newly-formed Citizens Coach Co. if the City Council passes on a formal franchise. The council has already accepted the Citizens Coach franchise bid.

The new firm, incorporated by three Little Rock attorneys, will have as one of its key figures Fred C. Worden, president and general manager of the Des Moines Transit Co., who will enter the Little Rock scene on a personal basis.

CTC has been strikebound since last June 22.

The dormant question of municipal mass transportation in Los Angeles was brought to life last month by a state legislative subcommittee conducting hearings on proposals empowering the LA Metropolitan Transit Authority to buy the area's two main transit firms – Los Angeles Transit and Metropolitan Coach Lines. LAMTA would use the two as the basis of an area-wide system, probably including rapid transit.

LAMTA was created in 1951, its original purpose being to study the feasibility of monorail in the Los Angeles area.

The plan is opposed by LA's mayor and by local groups who say sufficient study hasn't been given LA's problems. . .complained the purchase price of LATL and Metro was too high.

After 60 days, the Community Traction Co. is still undecided on the fate of its experiment in free transportation in a 24-block area of downtown Toledo. CTC will give the plan another 30-day trial, after which it may be made permanent.

While buses have been speeded up by 10 to 40 per cent, according to C. H. Forsgard, CTC president, December and January (the trial period) were not normal months what with bad weather and holiday loads. February would be a more realistic test period, the company felt.

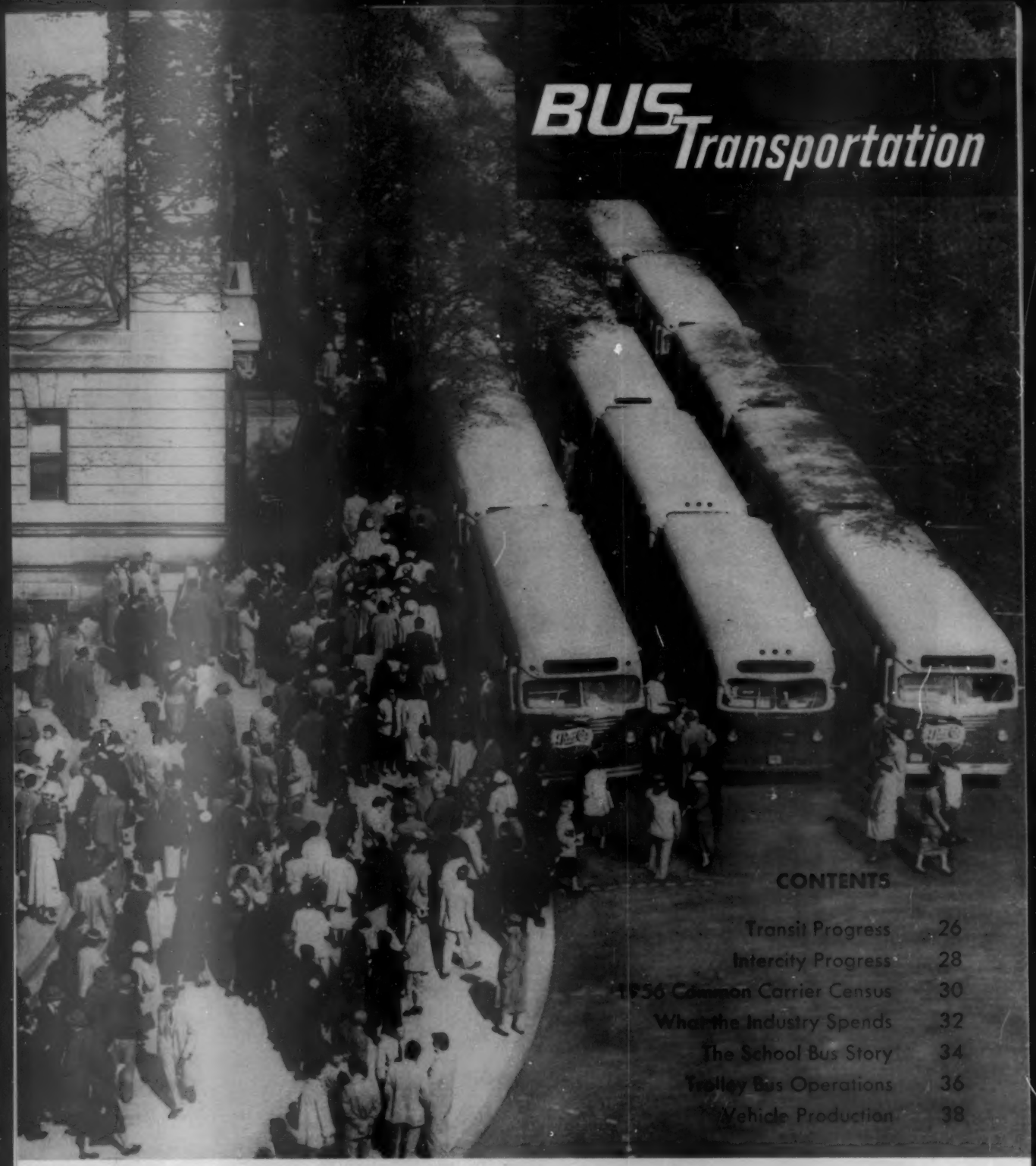
Directors of Twin City Rapid Transit Co. have decided against a proposal to split the company's stock on a two-for-one basis. Scheduled for stockholders' votes next month, the proposal was rescinded because the board felt "this was not the proper time for such an action."

The stock split plan, first announced in December, will probably be considered at a later date, James H. Towey, Twin city secretary and treasurer said.

Policemen will once again be given free rides on the vehicles of the Toronto Transportation Commission, which last month decided on the change in an effort to reduce hooliganism on public vehicles.

The practice of free rides for police was discontinued ten years ago but because of recent attacks on conductors and other rowdy acts TTC decided to give its patrons and employees the added protection.

BUS Transportation



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34th Annual Review of

Industry Progress

Top Facts About the Bus Industry in 1955

Transit Progress . . .

In 1955 motor bus operations rang up a net operating profit of $21,597,000—an increase of 31.6 per cent over last year's net revenue.

Motor Bus Operations

	1955	1954
Number of Companies	1,575	1,575
Buses Owned	55,200	55,700
Miles of Street	60,600	61,700
Operating Revenue	$880,987,000	$893,405,000
Depreciation Expense	71,659,000	71,120,000
Taxes Assignable to Operations	76,259,000	77,100,000
All Other Operating Expenses	711,472,000	729,532,000
Net Operating Revenue	21,597,000	15,653,000
Revenue Passengers Carried	5,758,375,000	6,125,000,000
Total Bus Miles	1,711,019,000	1,743,000,000
Employees on Payroll	115,600	121,200

Trolley Bus Operations

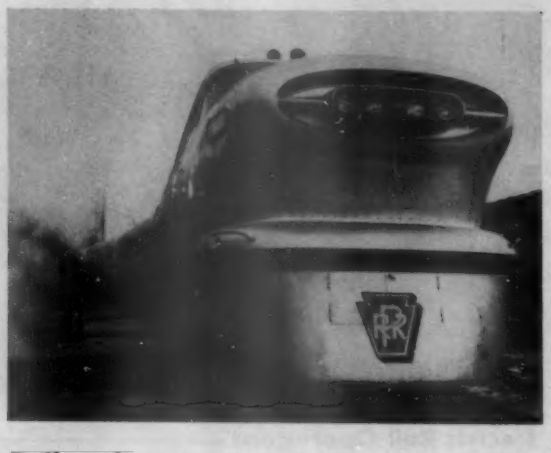
	1955	1954
Number of Companies	39	41
Trolley Buses Owned	6,623	6,824
Miles of Street	1,323	1,487
Operating Revenue	$132,134,000	$141,320,000
Depreciation Expense	9,543,000	10,892,000
Taxes Assignable to Operations	6,695,000	7,047,000
All Other Operating Expenses	107,145,000	113,621,000
Net Operating Revenue	8,751,000	9,760,000
Revenue Passengers	936,804,000	1,034,000,000
Total Bus Miles	184,052,000	195,800,000
Employees on Payroll	15,400	15,980

Electric Rail Operations

	1955	1954
Number of Companies	64	70
Number of Cars Owned	15,250	15,600
Miles of Single Track	5,918	6,665
Miles of First Main Track	3,174	3,712
Operating Revenue	$450,974,000	$473,400,000
Revenue Passengers	2,633,000,000	2,820,000,000
Revenue Miles Operated	555,630,000	591,400,000

Electric Rail data supplied by American Transit Association

INTERCITY MOTOR COACHES carried more passengers in 1955 than domestic airlines and railroads combined.



Domestic Airlines

	1955*	1954
No. Operating Companies	26	27
No. Planes Owned	1,162	1,136
No. Passengers Carried	37,640,000	32,300,000
No. Passenger Miles Flown	19,900,000,000	16,640,000,000
No. Plane Miles Flown	622,184,000	544,884,000
Passenger Operating Revenue	$1,050,000,000	$898,350,000

Data on airlines furnished by Aviation Week Magazine *Preliminary

Railroads

	1955*	1954
No. Passenger Cars	32,800	32,800
Miles First Main Track	393,000	393,000
No. Passengers	433,700,000	439,365,593
No. Passenger Miles	28,500,000,000	29,292,424,000
Passenger Revenue	$742,000,000	$767,282,709

Data on Class 1 Railroads furnished by Eastern Railroad Presidents' Conference
*Preliminary

Intercity Progress . . .

Here are the 1955 figures for the intercity motor coach industry, as well as statistics on other forms of intercity transportation—the domestic airlines and Class I railroads.

	1955	1954
Number of Operating Companies	2,600	2,625
Long Haul	860	865
Short Haul	1,740	1,760
Number of Buses Owned	27,200	27,600
Long Haul	18,050	18,200
Short Haul	9,150	9,400
Miles of Highway	410,000	398,300
Long Haul	342,600	330,700
Short Haul	67,400	67,600
Operating Revenue	$527,660,000	$530,312,000
Long Haul	423,870,000	425,998,000
Short Haul	103,790,000	104,314,000
Depreciation Expense	37,015,000	36,265,000
Long Haul	28,755,000	27,412,000
Short Haul	8,260,000	8,853,000
Taxes Assignable to Operations	43,678,000	42,530,000
Long Haul	35,727,000	34,080,000
Short Haul	7,951,000	8,450,000
All Other Operating Expenses	410,785,000	416,898,000
Long Haul	323,331,000	325,610,000
Short Haul	87,454,000	91,288,000
Net Operating Revenue	36,182,000	34,619,000
Long Haul	36,057,000	38,896,000
Short Haul	125,000	–4,277,000
Revenue Passengers Carried	611,875,000	668,901,000
Long Haul	281,648,000	304,814,000
Short Haul	330,227,000	364,087,000
Total Bus Miles	1,375,161,000	1,436,487,000
Long Haul	1,088,130,000	1,137,807,000
Short Haul	287,031,000	298,680,000
Number of Employees on Payroll	58,417	61,200
Long Haul	45,974	47,250
Short Haul	12,443	13,950

1956 Census of Bus Operations

STATE	GRAND TOTAL			TRANSIT OPERATIONS			INTERCITY OPERATIONS		
	Number of Companies	Number of Buses	Miles of Highway	Number of Companies	Number of Buses	Miles of Highway	Number of Companies	Number of Buses	Miles of Highway
B. T. Estimated Total	4,175	82,400	470,600	1,575	55,200	60,600	2,600	27,200	410,000
B. T. Census Count	3,757	78,843	418,677	1,503	54,624	59,062	2,254	24,219	359,615
Alabama	97	903	7,553	16	504	1,169	81	399	6,384
Arizona	29	274	2,581	8	179	565	21	95	2,016
Arkansas	75	573	4,400	15	307	528	60	266	3,872
California	195	6,143	26,846	76	4,364	4,215	119	1,779	22,631
Colorado	36	607	3,100	13	468	410	23	139	2,690
Connecticut	47	1,210	2,587	24	1,081	1,297	23	129	1,290
Delaware	9	111	392	3	93	190	6	18	202
District of Columbia	5	1,165	2,251	1	877	840	4	288	1,411
Florida	54	1,499	7,141	37	1,129	2,053	17	370	5,088
Georgia	90	967	8,907	24	557	963	66	410	7,944
Idaho	29	163	2,369	5	66	248	24	97	2,121
Illinois	120	5,147	8,809	71	4,596	2,776	49	551	6,033
Indiana	127	1,401	7,289	40	935	1,706	87	466	5,583
Iowa	47	728	4,897	21	585	656	26	143	4,241
Kansas	52	708	13,827	15	317	572	37	391	13,255
Kentucky	107	2,047	19,680	31	790	1,014	76	1,257	18,666
Louisiana	79	1,098	13,036	21	551	712	58	547	12,324
Maine	33	311	3,178	12	189	303	21	122	2,875
Maryland	73	1,331	4,282	16	798	688	57	533	3,594
Massachusetts	93	2,971	8,664	44	2,384	3,240	49	587	5,424
Michigan	76	3,573	13,758	40	2,707	2,197	36	866	11,561
Minnesota	61	2,056	16,756	34	1,369	1,244	27	687	15,512
Mississippi	43	358	2,922	17	252	729	26	106	2,193
Missouri	64	2,224	12,112	19	1,672	1,172	45	552	10,940
Montana	28	165	2,842	8	101	99	20	64	2,743
Nebraska	41	1,121	24,521	12	338	396	29	783	24,125
Nevada	12	76	2,465	3	22	128	9	54	2,338
New Hampshire	36	209	1,643	7	83	165	29	126	1,478
New Jersey	424	5,077	7,396	368	3,835	3,520	56	1,242	3,876
New Mexico	29	250	3,755	8	101	470	21	149	3,285
New York	221	9,053	11,539	97	7,986	4,189	124	1,067	7,350
North Carolina	110	1,762	18,251	44	806	1,971	66	956	16,280
North Dakota	21	108	2,540	3	62	62	18	46	2,478
Ohio	154	5,081	26,216	50	2,923	2,693	104	2,158	23,523
Oklahoma	25	804	9,165	10	389	451	15	415	8,714
Oregon	26	481	3,951	8	339	350	18	142	3,601
Pennsylvania	304	5,320	19,235	84	3,382	4,547	220	1,938	14,688
Rhode Island	13	381	739	3	322	335	10	59	404
South Carolina	25	237	2,866	9	94	701	16	143	2,165
South Dakota	16	148	6,181	7	69	103	9	79	6,078
Tennessee	121	1,213	5,685	19	731	812	102	482	4,873
Texas	122	3,625	30,576	38	2,228	2,935	84	1,397	27,641
Utah	27	366	3,088	6	223	391	21	143	2,697
Vermont	26	155	2,722	3	22	58	23	133	2,664
Virginia	86	2,077	7,418	25	1,653	1,885	61	424	5,533
Washington	81	1,162	7,805	26	699	1,108	55	463	6,697
West Virginia	84	1,108	14,050	27	424	1,191	57	684	12,859
Wisconsin	70	1,227	4,301	32	994	950	38	233	3,351
Wyoming	14	69	2,389	3	28	65	11	41	2,324

- The figures shown above give the number of companies having their operating headquarters in the states listed. All equipment and highway mileage of interstate companies are included in the state where such companies have their general offices.

- In New Jersey, a number of individuals operate on the same routes in a pool. The pool operation is considered as a unit for miles of highway covered. However, each operator in the pool is counted as a single company.

Transit and Intercity

Here it is—BUS TRANSPORTATIONS's annual count of the bus industry in the United States, showing the number of common carriers in each state, the amount of equipment, and the number of highway miles on which buses operate.

THIRTY-SIX MILLION PASSENGERS A DAY . . . 1.1 billion a month . . . 13.215 billion a year! That is the amazing transportation job being done by the vehicles owned and operated by the transit, intercity and school carriers of this country.

The facts and figures in this 34th Annual Review of Industry Progress point up graphically the job our industry is doing. And a big job it is, for every year people equal to 81 times the total U.S. population depend on industry vehicles for transportation.

In fact, for more than 40,000 incorporated communities in the United States buses are the sole means of public transportation.

The industry which performs this monumental transportation task is a changing one—as well it must be to keep up with the seething population shifts now going on in this country.

In compiling the census figures which appear on the opposite page, the statistical staff of BUS TRANSPORTATION noted especially the change in state locations of intercity buses, much of which was caused by the formation of Southeastern Greyhound out of existing Greyhound companies. As a result, there were several major shifts in bus population.

One other point should be mentioned. In many cases it is virtually impossible to distinguish between short haul intercity and city-suburban operations.

The differentiation is important, for in our census the latter category is classified as transit rather than intercity operation. In all of these cases, however, we used the carrier's own description of his type of service as the basis for classification.

But no matter how you look at it, the bus industry is a gigantic one, representing a gross investment of almost $6 billion. And like the industry, that investment is far from static. Below are some examples of . . .

What the industry is spending on new equipment

Besides the vast expenditures for fuel and lubricants, tires and tubes, maintenance materials and replacement parts, all of which you'll find in more detail on the next two pages, bus operators have been making news with new equipment investments.

The past year saw the completion of a number of huge projects and the launching of a number of new ones. Biggest project completed was the $89 million, 12-year transit improvement program of Cleveland Transit System, including CTS' Rapid Transit.

Other large-scale programs were the completion of a $35-million order by Greyhound Corp., for new two-level Scenicruiser highway coaches, and a $65-million 600-car order by the New York Transit Authority, which also seeks another $52 million for 500 additional vehicles. Contracts for 318 of these have already been approved by the Transit Authority.

Philadelphia Transportation Co. has mapped out a $45-million modernization program for new diesel buses, trolley buses and electric rail vehicles.

San Francisco Municipal Railway has placed a $10-million order for 400 buses on a leasing arrangement, and Trailways Systems is investing $3 to $4 million for two-level "Vista-Liner" coaches.

Boston's Metropolitan Transit Authority has ordered 100 large-capacity buses for use in that city, and Niagara Frontier Transit has 60 buses on order for use in Buffalo, N.Y. Dallas ordered 50 new buses, which are now being delivered to replace remaining trolleys.

The biggest single export order of all time in the bus industry was also placed this year, when Saudi-Arabian interests bought 700 school type buses at a cost of $5 million.

At year end, the following totals of firm orders had been placed, according to reports from manufacturers . . .

86 orders for 1,117 transit buses valued at $23.25 million;

93 orders for 591 intercity coaches valued at $17.6 million.

School bus business is expected to be as good, and probably better, than it was in 1955, when 20,220 school buses were produced.

In fact, in all branches of the industry, transit, intercity and school—1956 could and should be an important year.

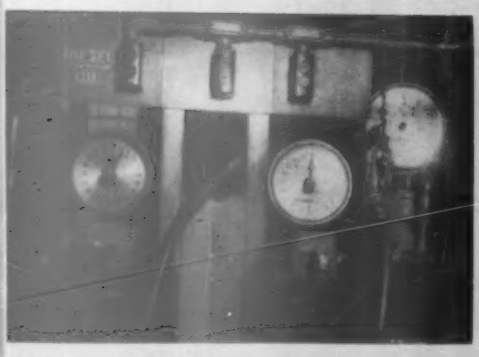
Admittedly, common carrier operations have not had easy sledding since the end of World War II. But as the census figures show, they have battled away, held their own in spite of tough competition, and now seem ready to consolidate their position and start moving ahead at full speed.

What buses will look like 25 or 50 years from now nobody knows. But this much is certain . . .

Whatever it is, and however it's operated, the bus of the future holds a key place in the schemes of city and highway planners.

Look How Bus Industry

	1940
New Buses	17,207 New Buses $89,000,000

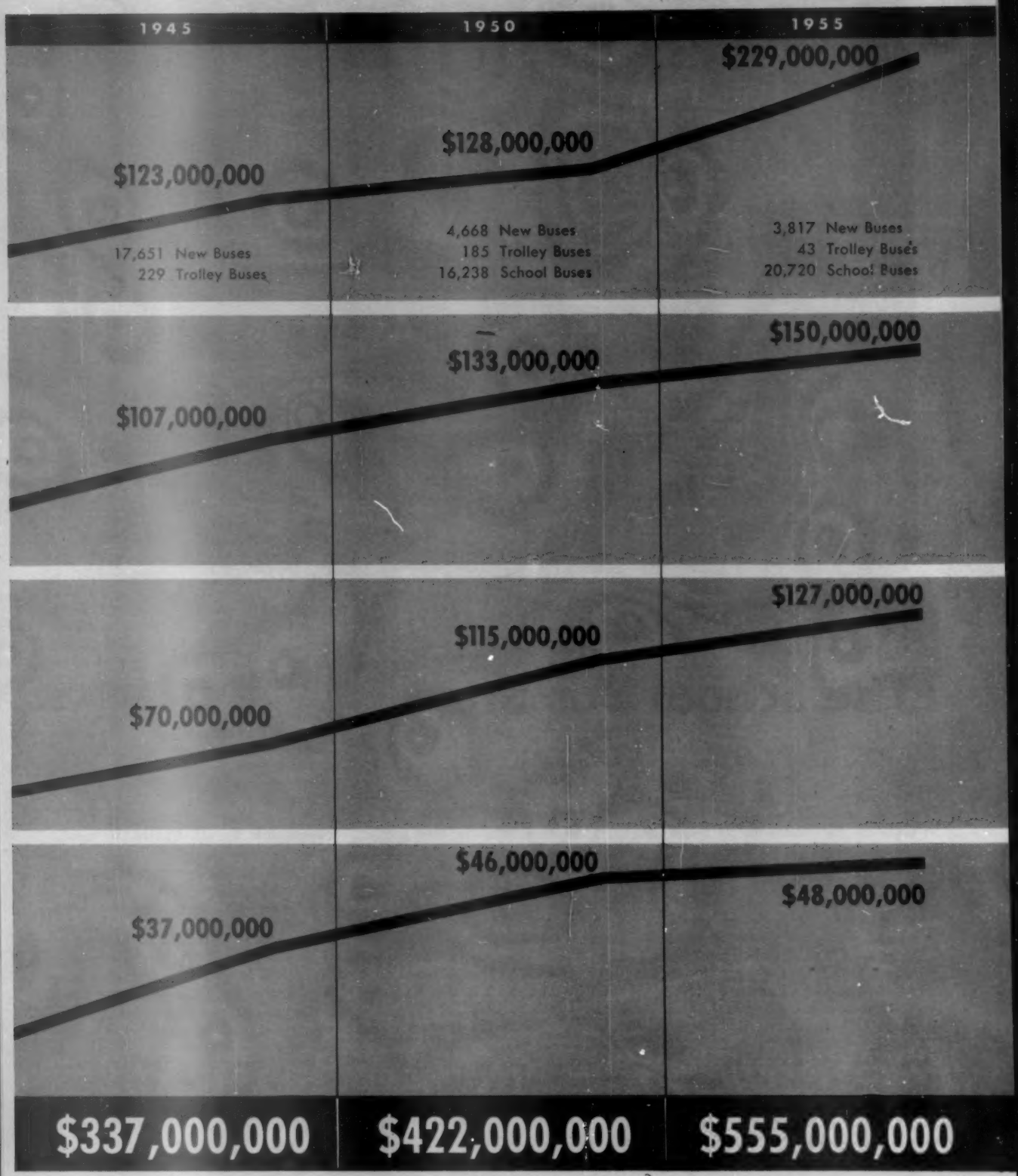


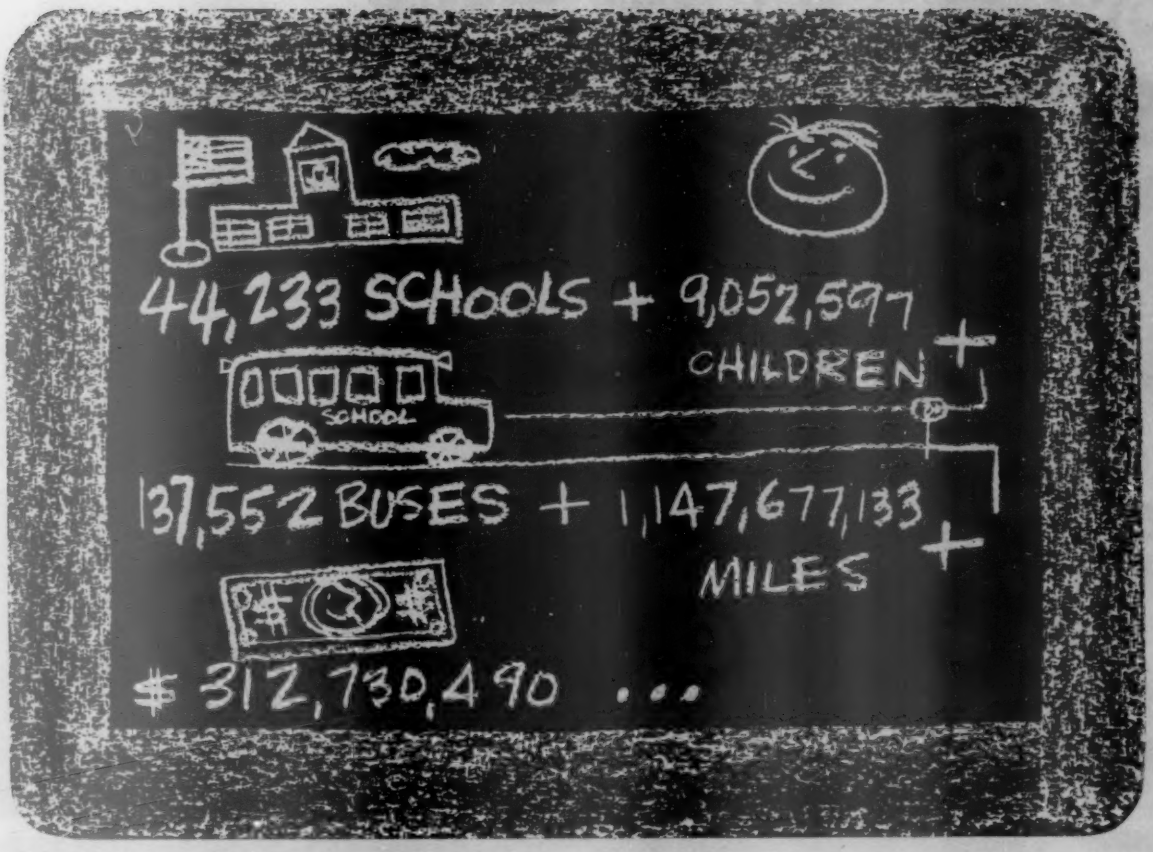
Fuels and Lubricants	$60,000,000

Maintenance Materials	$43,000,000

Tires and Tubes	$20,500,000
TOTALS	$212,500,000

Investment Has Grown





Added together, they equal . . .

The School Bus Story

TWICE A DAY, in the morning and again in the afternoon, the face of America is dotted with golden yellow as the nation's vast school bus fleet takes to the road with its horde of young charges—more than one out of four of all children now attending school.

Not only is it a vast fleet, it's a growing one. Skyrocketing would be a better word. For the school bus fleet must keep pace with the school population, which is enjoying the most meteoric rise in its history.

Right now, according to the United States Office of Education, there are 32,260,000 pupils in primary and secondary schools—a record.

Still, that's only the beginning. Government experts predict 42,818,000 students in 1960 . . . and almost 48,000,000 by 1965.

What about school buses? What part do they play in this colossal education program? The figures speak for themselves.

In 1947 there were 85,900 school buses. They carried 4,952,000 children on less than 2,000,000 route miles at a total cost of $130,700,000.

By 1954—seven short years later—there were 134,972 school buses. They carried eight and a half million children a total of 1,089,385,000 miles. And the cost of transportation was almost $296 million.

Now, only one year later, look at the figures for 1955. There are 137,552 school buses carrying 9,052,597 children every school day. They piled up 1,147,677,133 miles . . . at a total cost of $312,730,490.

Not too many industries can show comparable growth figures. In eight years buses are up almost 50 per cent . . . children carried have increased by close to 83 per cent . . . and income has risen by a staggering 130 per cent.

With the expected rise in the school population, the future of school bus operations looks rosier than ever before. For as though millions more students were not enough, there are other influences working in favor of the school bus operators.

One is the tendency toward centralized schools. This has come about because of the mushrooming school

population. Small towns and districts can no longer afford their own schools for their own children. When they could, very often the children would walk to school.

All over the country, towns and villages are banding together to form centralized, or regional schools. That spreads the area from which the school draws children . . . and automatically it creates the need for increased school bus service.

Not only that, but in most cases these centralized schools are in addition to already existing ones, so that previous bus service is not lessened.

Another favorable factor is the increasing use of field trips as an integral part of education. Children can learn by seeing and doing as well as by studying. Educators have long known that, of course, but now the availability of the school bus is enabling them to make field trips a standard part of the curriculum. That means more miles . . . more revenue . . . for the school bus operator.

While school bus operators as such are getting ready to meet this golden future, it must be remembered that it's a future which lies ripe and waiting for many common carriers as well.

Right now there are many of transit and intercity operations engaged in school work. For them it can become an increasingly important part of their business.

The school bus operators, for whom pupil transportation is the only source of revenue, have lately given unmistakable signs of rising to meet the industry growing before their eyes.

They are beginning to band together . . . to organize . . . to form associations and to take a keener interest than ever in school affairs and school equipment. In some cases, they work closely with common carrier associations in their states, and join them in opposing hostile bills, promoting favorable ones, etc.

All these are good signs that as our educational system grows the bus industry will grow with it, and be prepared to hold up its end of the vital task of getting millions of children to school and back every school day of the year.

For remember, more than one out of four school children now depend on the school bus to get to and from the classroom.

School Bus Census

	Schools and Districts Using Buses	Children Carried Daily	No. of Buses	Total Bus Miles Annually	Cost of Pupil Transport
Alabama	1,842	278,119	4,349	32,282,652	$ 6,954,607
Arizona	323	61,041	600	5,177,680	1,609,923
Arkansas	423	179,328	3,042	27,149,850	5,769,998
California	1,400	350,000	5,723	47,500,000	19,344,559
Colorodo	555	59,805	1,652	7,694,512	2,802,671
Connecticut	173	113,758	1,051	9,440,828	4,471,826
Delaware	102	22,131	352	2,534,400	807,210
Dist. of Columbia	4	73	4	17,796	48,662
Florida	1,105	244,691	2,355	21,778,176	4,900,984
Georgia	159	356,721	4,269	43,360,920	10,195,686
Idaho	114	59,557	1,107	7,783,860	2,562,569
Illinois	1,420	278,428	7,141	42,997,200	15,678,608
Indiana	927	300,459	6,143	43,188,535	13,899,$44
Iowa	1,000	159,233	4,092	30,959,689	8,550,805
Kansas	2,239	81,733	2,922	25,118,772	6,189,828
Kentucky	2,141	265,074	2,540	29,161,932	6,422,785
Louisiana	66	288,456	3,006	24,329,520	9,837,725
Maine	491	71,799	1,284	9,661,860	2,450,000
Maryland	711	170,664	1,884	12,616,400	5,560,069
Massachusetts	1,455	166,303	1,908	10,931,595	3,978,115
Michigan	830	340,000	4,200	40,000,000	11,796,000
Minnesota	690	185,062	3,893	31,782,585	7,252,145
Mississippi	2,000	221,563	4,321	25,000,000	5,551,854
Missouri	950	224,000	4,109	36,000,000	10,500,000
Montana	600	34,549	760	7,513,912	2,861,886
Nebraska	308	17,000	569	4,425,682	1,900,000
Nevada	82	8,323	175	1,390,608	781,034
New Hampshire	232	36,746	420	5,405,301	1,601,516
New Jersey	503	178,801	2,439	12,115,301	7,930,006
New Mexico	266	45,495	1,133	8,865,300	3,043,075
New York	1,671	526,643	5,856	65,000,000	20,000,000
North Carolina	1,310	475,768	7,268	48,075,809	5,457,941
North Dakota	443	21,823	506	5,582,770	1,524,275
Ohio	1,247	520,352	6,979	50,584,500	12,191,018
Oklahoma	961	137,842	3,511	28,850,720	4,933,948
Oregon	470	135,425	1,841	19,751,786	5,530,500
Pennsylvania	2,200	515,412	6,535	69,230,000	16,925,206
Rhode Island	40	22,981	334	2,741,560	748,558
South Carolina	2,868	206,573	3,008	23,761,939	3,693,186
South Dakota	140	10,263	408	4,555,683	789,863
Tennessee	2,553	323,981	3,503	32,538,240	6,950,578
Texas	1,665	375,000	7,630	82,000,000	17,975,957
Utah	41	53,673	531	4,060,374	1,451,691
Vermont	557	21,546	294	1,762,808	1,075,566
Virginia	1,855	347,369	3,750	32,906,599	6,519,416
Washington	433	187,505	2,664	20,502,528	5,959,310
West Virginia	1,834	211,366	1,662	15,274,000	5,347,963
Wisconsin	640	141,675	2,750	30,156,000	8,988,000
Wyoming	194	18,488	479	4,156,951	1,413,436
TOTAL	44,233	9,052,597	137,552	1,147,677,133	$312,730,490

Smooth, quiet-operating . . .

Trolley Buses Now Carry

Trolley bus supporters see their vehicle as a logical partner in the development of additional rapid transit facilities such as in Cleveland, Boston, Chicago.

DESPITE A SLOW YEAR for transit expansion, trolley coach supporters say chinks of blue have begun to show through the clouds of the past two years.

Forty-three new trolley coaches were delivered in 1955 and placed in service on a line operated by Philadelphia Transportation Company.

Chicago, Milwaukee, and Birmingham all built or announced new trolley coach lines. In Canada, Winnipeg and Port Arthur also built new lines. Several foreign countries, including Mexico, Belgium, New Zealand, Switzerland, and South Africa, either expanded or announced plans to expand trolley coach operation.

The decision to go ahead with these lines wasn't made hastily. On some properties, many months were spent studying the economics of vehicle performance. The fact the expansion programs went ahead after such study seems to indicate there were performance data to support the trolley coach claims of low maintenance and operating expense, and rider popularity.

Although trolley coach development has been slow, the post-war record shows that the vehicle has made definite gains. In the last war year of 1945, trolley coaches were carrying only five per cent of the total transit load. The percentage had increased to 7.1 per cent in 1948, rose to 10 per cent in 1954 and 1955.

Trolley coach advocates also see their vehicle as a logical partner in development of additional rapid transit facilities.

Recent additions to rapid transit facilities in Toronto, Cleveland, Philadelphia, Boston, and Chicago have found the trolley coach used extensively either on feeder lines or in on-street lines paralleling rapid transit.

The "fast" ride undoubtedly holds a strong appeal for

UNITED STATES OPERATIONS

Philadelphia Transportation Co.*	202
New Orleans Public Service Co.	212
Chicago Transit Authority	672
City of New York	200
Memphis Street Railway Co.	229
Shreveport Railways Co.	89
Duluth Superior Transit Co.	32
St. Joseph Light & Power Co.	35
Indianapolis Transit System, Inc.	205
Columbus Transit Co.	232
City Coach Lines, Inc., Greensboro, N. C.	19
City Coach Lines, Inc., Greenville, S. C.	16
Municipal Rys. of San Francisco	398
Cleveland Transit System	428
Metropolitan Transit Authority, Boston, Mass.	443
Oakwood Street Railway, Dayton, Ohio	19
Youngstown Municipal Railway Co.	55
Portland Traction Co., Portland, Oregon	81
City Transit Co., Dayton, Ohio	160
Cincinnati Transit Co.	246
Flint Trolley Coach, Inc.	42
Milwaukee & Suburban Transport	400
Atlanta Transit System, Inc.	453
Cincinnati Newport & Covington Ry. Co.	31
Honolulu Rapid Trans. Co.	115
Baltimore Transit Co.	190
Kansas City Public Serv. Co.	176
Des Moines Transit Co.	143
Wilkes-Barre Transit Corp.	68
Delaware Coach Co.	72
Seattle Transit System	307
Fort Wayne Transit, Inc.	68
Akron Transportation Co.	70
Dallas Transit Co.	80
Birmingham Transit Co.	148
Los Angeles Transit Lines	110
Capitol Transit Co., Little Rock, Ark.	31
City of Detroit — Dept. St. Rys.	140
Johnstown Traction Co.	6
Total Vehicles U.S. and Hawaii	**6,623**
Number of Properties	**39**

*Includes 71 owned by City, leased and operated by P. T. C.

CANADIAN OPERATIONS

Montreal Transportation Commission	105
Winnipeg Electric Co.	134
Edmonton Transportation System	102
Kitchener Public Utilities Commission	16
Calgary Transit System	85
Toronto Transportation Commission	140
Fort William Transit	10
Regina Transit System	38
Port Arthur	10
British Columbia Elec. Co., Ltd.	327
Nova Scotia Lt. & Pr. Co., Ltd.	81
Saskatoon Municipal Ry.	30
Cornwall St. Ry. Lt. & Pr. Co., Ltd.	16
Hamilton Street Railway Co.	48
Ottawa Transportation Commission	10
Total Vehicles in Canada	**1,152**
Number of Properties	**15**

GRAND TOTAL ALL VEHICLES 7,775
TOTAL NUMBER OF PROPERTIES 54

One of 10 Transit Riders

the transit rider. He can't always turn to rapid transit for his fast ride. The best alternative is fast-moving on-street transportation. The ability of the trolley coach to hold schedule speeds has long been an established fact. The problem is to keep congestion out of the way so that the vehicle can move.

One solution may be found in providing a separate traffic lane for transit vehicles. Then the trolley coach, with its high acceleration rate, dependability and dynamic braking, would have little difficulty in giving passengers the "fast" ride.

Trends in fuel costs seem to favor the trolley coach. A report presented by David H. Moore, Battelle Memorial Institute, Columbus, Ohio to the A.T.A. Electrical Division, and again quoted at the September meeting of the A.T.A. by C. W. Wolf, Electrical Engineer, Chicago Transit Authority, had this to say:

"It is most unlikely that the price of crude oil would become less costly. On the contrary, increases in crude oil prices should be expected. On the other hand, the possibilities for further reductions of electric power costs amounting to as much as 15 to 20 per cent on a constant dollar basis, appear to be excellent."

Regardless of the accuracy of this prediction, the price of electric power hasn't been working to the advantage of the trolley coach in some areas.

However, the trolley coach industry believes this is a temporary and exceptional condition and that the continuing growth of the electric power industry will result in lower power rates, making electric vehicles increasingly attractive to the transit operator.

Continuing postponement by some properties of the decision on whether or not to replace their current fleets with new vehicles has slowed down the trolley coach industry. The durability of the trolley coach is partly to blame for this delay because instead of lasting ten or 12 years, its useful service life has been extended to 15, 18 and even 20 years.

All this points to the conclusion that the future of the trolley coach is closely tied to the future of the transit industry. If the industry can find ways to provide the "fast" ride and to increase transit patronage, then signs point to expansion of trolley coach service.

Since even the most objective observers seem to feel that public transportation must have an important place in the future, the supporters of the trolley coach reason there also is an important role for their vehicle.

Annual Bus Production • 1951-1955

INTERCITY TYPE					Seating	TRANSIT TYPE				
1951	1952	1953	1954	1955	Capacity	1951	1952	1953	1954	1955
....	37	...	...	4	11	....	....	11	1	....
25	1	52	61	40	12	....	....	4	....	5
....	....	...	...	70	15	....	....	....	....	....
....	....	...	...	1	17	....	....	....	....	....
.. .	....	...	...	...	21	15	....	....	...	4
...	9	1	...	....	24	....	....	....	....	....
9	....	13	3	....	25	...	....	....	....	6
...	...	...	...	....	27	61	12	24	....	2
32	15	5	...	....	28	....	1	....	....	....
96	560	68	58	33	29	33	24	2	11	. ..
....	....	...	...	....	30	9	3	4	....	2
4	....	...	...	....	31	725	161	92	148	122
...	...	...	...	39	32	17	39	11	3	14
40	25	19	12	14	33	105	39	1	2	1
....	...	...	...	....	34	24	9	8	....	1
....	14	...	...	....	35	250	123	89	52	3
622	1,145	...	...	....	36	592	257	93	11	...
1,877	242	39	29	133	37	67	33	135	184	117
....	....	...	...	....	38	2	4	10	2	...
....	....	...	3	....	39	....	4	7	3	...
....	....	....	....	....	40	38	36	. ..	10	....
903	512	711	484	278	41	62	26	34	32	33
....	....	. .	...	....	42	25	1	2	....	....
....	3	...	...	12	44	77	139	76	15	25
....	170	6	230	502	45	1,258	653	696	618	696
....	....	...	...	2	47	....	....	....	....	121
....	....	...	...	....	48	2	48	133	286	83
....	....	...	..	....	49	...	78	....	....	249
....	....	...	...	....	50	452	141	63	48	1
....	....	...	...	....	51	432	539	671	759	1,069
....	....	...	...	....	52	509	....	137	324	135
....	....	...	...	....	54	....	....	....	10	....
....	....	...	...	....	55	1	....	64	....	....
....	....	...	...	....	58	....	....	165	....	....
3,608	2,733	914	880	1,128	Total	4,772	2,370	2,532	2,519	2,889

1951 Grand Total—29,149
Includes deliveries to U. S. Government, 693 Common Carrier Buses for Export. 19,-064 Domestic School Buses and 970 for Export, 18 Sightseers and 24 Special Purpose Vehicles.

1952 Grand Total—24,971
Includes deliveries to U. S. Government, 674 Common Carrier Buses for Export, 149 Sightseers and 63 Special purpose vehicles. 17,200 School Buses and 1,785 for Export.

1953 Grand Total—19,540
Includes 361 Common Carrier Buses for Export and 85 Sightseers for Domestic Service. 14,388 School Buses for Domestic Service and 1,260 for Export.

1954 Grand Total—25,156
Includes 41 Sightseeing and 60 Special purpose buses and 17,802 School Buses for Domestic Service and 319 Common Carrier Buses and 3,535 School Buses for Export.

1955 Grand Total—24,591
Includes 35 Sightseeing and 19 Special purpose buses and 20,720 School Buses also 197 Common Carrier Buses for Export.

$230 Million for New Buses

24,615 buses were produced during the past year. Common carrier operations bought 3,895 . . . school bus services accounted for 20,720. Average seating capacity is now 44.6 passengers—highest in industry history.

By Earl F. Theisinger • *Editor*

NEARLY ONE QUARTER BILLION DOLLARS was spent in 1955 by the bus industry for the purchase of new buses.

Common carrier operations took delivery of 3,852 motor buses and 43 trolley buses. Operators of school bus transportation services acquired 20,720 new units.

The value of the new vehicles produced in 1955 is placed at $229,500,000. In addition, some $75 million was spent for electric transit equipment—rapid transit and subway cars.

Of the 1955 bus production, transit operations in the

Bus Seating Requirements—A 25 Year Tabulation

Year	TRANSIT		INTERCITY		SIGHTSEEING		TOTAL ALL TYPES			SCHOOL BUSES
	No. Buses Built	No. Seats Required	No. Buses Built	No. Seats Required	No. Buses Built	No. Seats Required	No. Buses Built	No. Seats Required	Avg. Seating Capacity	No. Built
1931	1,480	44,035	1,169	31,018	57	1,281	2,706	76,334	28.2	4,411
1932	716	18,913	743	19,992	34	773	1,493	39,678	26.6	2,777
1933	1,531	38,984	787	17,869	60	3,000	2,378	59,853	25.2	2,420
1934	2,423	66,525	1,463	35,472	....	....	3,886	101,997	26.2	4,582
1935	3,978	114,656	2,255	47,172	34	712	6,267	162,540	25.9	9,363
1936	5,800	167,985	2,610	64,101	90	2,718	8,500	234,804	27.6	8,913
1937	5,947	168,083	2,430	64,424	107	2,996	8,484	235,503	28.1	9,892
1938	3,606	97,143	2,167	61,174	89	1,958	5,862	160,275	27.3	11,272
1939	4,594	143,600	2,415	67,436	100	2,884	7,109	213,920	30.1	11,546
1940	4,573	146,010	2,001	61,575	67	1,538	6,641	209,123	31.5	10,566
1941	5,873	191,756	2,088	60,996	7	164	7,968	252,916	31.7	8,622
1942*	9,010	321,237	3,968	132,064	8	224	12,986	453,525	34.9	1,856
1943*	2,070	63,290	1,691	53,671	....	....	3,762	116,961	31.1	206
1944*	4,323	144,115	1,927	64,460	....	.. .	6,250	208,575	33.4	3,192
1945*	5,908	198,574	3,508	119,533	....	. ..	9,416	318,107	33.8	8,225
1946*	8,300	281,592	3,335	108,086	....	...	11,635	389,678	33.5	12,025
1947	14,726	537,658	5,338	173,757	21	769	20,085	712,184	35.5	18,619
1948	7,810	316,335	3,333	115,687	60	1,824	11,202	433,846	38.8	20,513
1949	3,776	146,962	863	29,518	25	675	4,664	177,155	37.9	14,480
1950	3,060	125,994	755	26,822	46	1,392	3,861	154,208	40.0	16,055
1951**	4,772	200,053	3,608	134,513	18	630	8,398	335,196	40.0	19,064
1952**	2,370	102,761	2,730	97,497	149	5,006	5,249	205,264	40.0	17,200
1953	2,532	116,616	914	34,576	85	3,205	3,531	154,397	43.7	14,388
1954	2,519	117,264	880	33,350	91	2,095	3,490	151,709	43.7	17,802
1955	2,689	126,618	1,128	43,977	35	1,217	3,852	171,612	44.6	20,720
Total	**119,382**	**3,995,659**	**54,106**	**1,698,540**	**1,183**	**35,016**	**169,675**	**5,729,360**	...	**268,719**

*Exclusive of vehicles Delivered to U.S. Government Agencies

**Inclusive of vehicles Delivered to U.S. Government Agencies

Was Spent During 1955

United States and Canada took delivery of 2,689 motor buses and 43 trolley buses; intercity motor carriers took 1,128 vehicles. Thirty-five sightseeing buses and 19 special purpose vehicles also were produced.

Buses Get Bigger • The passenger carrying capacity of buses has grown steadily. Prior to the war, the average seating capacity of buses then being built was less than 30 passengers compared to today's new vehicles which have an average capacity of 44.6 passengers. This increase of approximately 50 percent in carrying capacity means that ten current models can carry a seated load equivalent to that of 15 prewar jobs.

Current production of 3,817 transit and intercity buses—each with an average seating capacity of 44.6 passengers—required a total of 170,595 seats. This compares to the 1954 production of 3,399 transit and intercity buses—each with an average seating capacity of 43.7 passengers—which required a total of 148,537 seats.

The demand for large capacity buses continues to grow as a comparison of current production figures with those of previous years will reveal. Eighty nine per cent of all transit buses built in 1955 were of 45-passenger capacity or larger and 70 per cent of the current intercity bus production were in 41-passenger sizes or larger. Here are some interesting statistics on vehicle sizes:

• *51-passenger transit bus* was production leader in 1955 with a total of 1,069 units produced. This size made up 40 per cent of transit bus production.

• *45-passenger transit bus* was second in production

with 696 and accounted for 26 per cent of current transit bus production.

• *45-passenger intercity bus* was in third place with 502. This size accounted for 45 per cent of the intercity vehicle production.

• *41-passenger intercity bus* was fourth on the production line with 278 units produced and represented about 25 per cent of the intercity production.

And now let's look at the figures on common carrier production for the five year period 1951-1955 as shown in the Annual Bus Production table on page 38.

During this five-year period, a total of 24,145 common carrier buses were built—14,882 of these were transit vehicles and 9,263 were intercity types. Of this five-year production, four vehicle sizes make up more than 50 per cent. These four top favorites are:

45-passenger transit	3,921
51-passenger transit	3,470
41-passenger intercity	2,888
37-passenger intercity	2,320
Total	**12,599**

How the total production of transit and intercity buses during the past five years is made up acccording to several size groups is shown in the following table:

Passenger Capacity	Transit No. Built	Transit Percent of Total	Intercity No. Built	Intercity Percent of Total
41 & Over	10,995	73.4	3,812	41.6
35-40	2,125	14.3	4,104	44.1
21-34	1,762	12.3	1,055	11.3
Under 21	00	—	291	3.0
Total	**14,882**	**100.0**	**9,263**	**100.0**

Bus purchases over the past ten years . . .

At the end of World War II the nation's bus fleet was battle-weary, and operators from coast to coast embarked on a huge replacement program.

In the ten years since the war's end the transit and intercity industries have bought and put into service 75,428 new motor vehicles; 52,534 transit buses and 22,874 intercity coaches. The table at right shows what these two groups bought in each year.

A word regarding seats. It took a total of 2,869,636 seats to equip these 75,428 common carrier vehicles. Transit vehicles required 2,071,853 and intercity coaches 797,783.

Year of Mfr.	Intercity	Transit	Total
1946	3,335	8,300	11,635
1947	5,338	14,726	20,064
1948	3,333	7,810	11,143
1949	863	3,776	4,639
1950	755	3,060	3,815
1951	3,608	4,772	8,380
1952	2,730	2,370	5,100
1953	914	2,532	3,446
1954	880	2,519	3,399
1955	1,128	2,689	3,817
Total	**22,874**	**52,554**	**75,428**

Facts on powerplants and transmissions . . .

Mechanical details on the powerplant and transmissions were supplied by the manufacturers of the 3,817 transit and intercity buses. Of these units, 3,382 had diesel powerplants, 345 had gasoline engines and 90 were equipped for LP gas. Powerplants were rear mounted on 3,545 units, under the floor on 218 and in front on 54.

About two-thirds had automatic transmissions; 2,448 were equipped with torque converters and 1,369 had manual gear shifts. Of the 20,720 school buses produced in 1955, powerplants all were gasoline except in a few instances and virtually all were equipped with manual gearshifts. The front of the bus is favorite engine location, by far, on school buses.

Where We Get Our Data • The data contained in this article are based on confidential production reports supplied to BUS TRANSPORTATION by the vehicle manufacturers. Only buses built and delivered in 1955 have been included in these figures. Figures on school bus body production are obtained from individual body builders and also from the School Bus Body Builders' Association. Members of this organization are Bluebird, Carpenter, Excel Hackney, Oneida, Superior of Lima, Ohio, Superior of Kusciusko, Miss., Thomas, Ward and Wayne. These ten builders account for about 90 percent of school bus production.

BUS TRANSPORTATION extends its thanks to these and all others who helped by supplying these figures.

Reprints of This Review Are Available . . .

• We will be happy to furnish a few extra reprints of this 34th Annual Review of Industry Progress to interested manufacturers and others who desire them. If you would like additional copies, in a handy 16-page booklet form, address your request to BUS TRANSPORTATION, Department P, 330 West 42 Street, New York 36, N. Y.

1956 Trolley Bus Specifications

TRADE NAME	Marmon-Herrington	Marmon-Herrington	Marmon-Herrington	Pullman-Standard	St. Louis Car Co.
Model	TC-44	TC-48	TC-50	TC-48	St. L-48
Unladen Weight, lb.	17,250	17,750	20,000	19,800	19,300
Wheelbase, In.	235	264	270	265	268
Over-all Length Over Bumpers, In.	443⅜	472⅜	478⅜	480	478
WHEEL CAGE					
Front	87¼	87¼	87¼	86¾	86¾
Rear	77⅜	77⅜	77⅜	71⅜	71⅜
Inside Body Length, In.*	423	452	458	464	450
Overhang**	113⅜	113⅜	113⅜	116	102
Turning Radius, Ft. †	38	42	44	40	43
TIRE SIZE					
Rear	11.00-22	11.00-22	11.00-22	11.00-22	11.00-22
Front	11.00-22	11.00-22	11.00-22	11.00-22	11.00-22
ELECTRICAL EQUIPMENT					
Propulsion Equipment					
Make	GE-W	GE-W	GE-W	GE-W	GE-W
Type	←		GE-1213 or W-1442	→	
H.P.	140	140	140	140	140
Self or Forced Ventilation	S	S	S	S	S or F
Make	GE-W	GE-W	GE-W	GE-W	GE-W
Type	A	A	A	A	A
Current Collection Equipment					
Make	OB	OB	OB	OB	OB
Type	11-T	11-T	11-T	11-T	11-T
Trolley Retriever	Earll	Earll	Earll	Earll	Earll
Battery	Opt	Opt	Opt	Opt	Ex
Lighting Arrester	No	No	No	Opt	GE-W
BODY DETAILS					
Maximum Seating Capacity	48	48	50	48	48
Min. Headroom Over Aisle	78	78	78	78¼	78
Aisle Width at Seat Cushion	30	30	30	28½	30
Body Frame Material	A-S	A-S	A-S	S	A-S
Body Panel Material	Al	Al	Al	S & MP	Al
Headlining Material	Al	Al	Al	MP	Al
Roof Material	Al	Al	Al	S	Al
Side Wall Insulation	Asb	Asb	Asb	MP	Air
Heating Equipment	FD	FD	FD	FD	Con
Ventilating Equipment	FD	FD	FD	FD	FD
Total Heater Output	12 KW-Min	12 KW-Min	12 KW-Min	12 KW-Min	12 KW-Min
Interior Light Fixtures	ESM or L	ESM or L	ESM or L	ESM or L	ESM or L
High or Low Voltage Illumination	High	High	High	High	High
12,30 or 120 Volt Lamps	30V	30V	30V	30V	30V
Wattage, Amperage or CP Bulb	1.6A	1.6A	1.6A	1.6A	1A
Floor Covering	R	R	R	RB	Opt
Window Sash	Troy	Troy	Troy	Ad-Ed	Ad
Seats	Io	Io	Io	Opt	HW
Seat Filler	Px H	Px H	Px H	CSP	CSP
Upholstery Material	Kor	Kor	Kor	Opt	Opt
Door Control	NP or Con	NP or Con	NP or Con	NP or Con	NP or Con
Entrance Location	AF	AF	AF	AF	AF
Exit Location	AR	AR	AR	AR	AR
TRANSMISSION					
Rear Axle					
Make	Tim	Tim	Tim	Tim	Tim
Model	7578-PX	7578-PX	7578-PX	7579-PX	7579-P
Standard Reduction Ratio	11.58	11.58	11.58	11.58	11.42
Springs					
Make	—	—	—	Ma	Ma
Front Length and Width, Ins.	60 x 4	60 x 4	60 x 4	58 x 5	60 x 4
Rear-Length and Width, Ins.	68 x 5	68 x 5	68 x 5	64 x 5	64 x 5
Pads Under or Over Axle	U-F	U-F	U-F	U-F	U-F
Front Axle					
Make	Tim	Tim	Tim	Tim	Tim
Model	2652-PX	2652-PX	2652-PX	2652-PX	2652-P
Steering Gear					
Make	Ross	Ross	Ross	Ross	Ross
Type	TE-71	TE-71	TE-71	TW-74	TW-74
No. Turns Full Lock to Full Lock	—	—	—	7.0	—
Brakes					
Make	Tim	Tim	Tim	Tim	BW 2
Type	PA	PA	PA	WA	PA
Front Drum Diameter and Width	16½ x 5	16½x5	16½ x 5	16½ x 5	16½ x 5
Rear Drum Diameter and Width	16½ x 7	16½x7	16½ x 7	16½ x 7	16 x 7
Lining Area, Sq. Ins.	920	920	920	920	920
Dynamic or Regenerative	Dy-R	Dy-R	Dy-R	Dy-Opt R	Dy

KEY TO ABBREVIATIONS

Electrical Equipment
- Earll
- Ex - Exide
- GE - General Electric
- OB - Ohio Brass
- W - Westinghouse
- A - Automatic
- F - Forced Ventilation
- S - Self Ventilation

Axles
- Tim - Timken

Springs
- Ma - Mather
- U-F - Under at rear-over at front

Brakes
- B-W - Bendix Westinghouse
- Tim - Timken
- Dy - Dynamic
- R - Regenerative
- Dy-R - Dynamic with 2 or GE
- - Regenerative with GE only
- WA - Two-shoe, air operated

Materials
- Al - Aluminum
- Asb - Asbestos-Asphaltum
- CBS - Copper Bearing Steel
- MP - Masonite Presdwood
- Ma - Mastic
- Mas - Masonite
- R - Rubber
- RB - Rub Bub
- S - Steel
- VP - Vinyl Plastic

Heating and Ventilating
- Con - Consolidated Metal Products
- FD - Forced Draft

Lighting
- ESM - Electric Service Mfg.
- L - Luminator

Window Sash
- Ad - Adams & Westlake
- Ed - Edwards

Seats
- CSP - Coiled Springs Padded
- HW - Heywood-Wakefield
- Io - Ionia
- Kor - Koroseal
- N - National
- PxH - Paratex back, curled hair seats

Door Control
- Con - Consolidated Car
- NP - National Pneumatic

Door Location
- AF - Ahead front axle
- AR - Ahead rear axle

* Back of rear seat to inner front panel
** Center rear axle to rear bumper
† Outer clearance diameter smallest turning circle to left

1956 Motor Bus

Line	TRADE NAME	MODEL NO.	Unladen Weight Ready for the Road	MAIN DIMENSIONS IN INCHES						Outer Clearance Diameter, Smallest Turning Circle To Left-Fl.	Front Tire Size	Rear Tire Size	Engine Location	Rear Engine Mounted Transversely or Longitudinally	Water Capacity Entire Cooling Systems, Gals.	FUEL TANK	SPRINGS		TRANSMISSION		
				Wheelbase	Overall Length over Bumpers	Gage, Front	Gage, Rear	Inside Body Length Back of Rear Seat to Inner Front Panel	Distance Center Line—Rear Axle to Rear of Bumper							Total Capacity in Gallons	Front Length and Width (Inches)	Rear Length and Width (Inches)	Clutch Lining Area Sq. In.	Type Transmission	Quiet in what Gears
1	Beck	Deck & Half	30000	256	480	80½	72	438	148	—	11.00—22	11.00—22	IR	L	15	150	AIR	AIR	—	HG	ALL
2	Beck	A G Mainliner	20000	228	420	80⅛	71½	358	110	—	11.00—20	11.00—20	IR	L	14	120	AIR	AIR	—	CM	ALL
3	Beck	Semi 1½	22000	228	420	80⅛	72	376	110	—	11.00—20	11.00—20	IR	L	14½	150	AIR	AIR	—	CM	ALL
4	Coachette	A-56-CS	8900	172	297¼	67	67	236½	87½	—	8.00—25	8.00—25	IF	—	5	30	45x2¼	52x2½	123.7	CM	ALL
5	Coachette	8-56-IC	8900	172	297¼	67	67	236½	87½	—	8.00—25	8.00—25	IF	—	5	30	45x2¼	52x2½	123.7	CM	ALL
6	Crown	A-590-10	18500	200½	384	80⅛	72	353½	114	70	10.00—20	10.00—20	UF	L	18	119	TORS	TORS	250	CM	—
7	Crown	A-590-11	19200	232	419½	80⅛	72	388	118	78	11.00—20	11.00—20	UF	L	18	119	TORS	TORS	250	CM	—
8	Crown	A-779-11	20500	232	419½	80⅛	72	388	118	78	11.00—22	11.00—22	UF	L	19.5	70	4x50	4x60	284	CM	—
9	Crown	AD-743-11	21200	232	419½	80⅛	72	388	118	78	11.00—22	11.00—22	UF	L	19.5	100	4x50	4x60	284	CM	—
10	Crown	**	15500	200½	384	80⅛	72	353½	114	70	10.00—20	10.00—20	UF	L	11.1	70	4x50	4x60	178	CM	—
11	Crown	**	16500	232	419½	80⅛	72	388	118	78	11.00—20	11.00—20	UF	L	19.5	100	4x50	4x60	284	CM	—
12	Fitzjohn Cityliner	FTG	—	155	323	81¾	74	277	88¾	57	8.25—20	8.25—20	IR	T	12	75	54x3	60x3	128	—	2-3
13	Fitzjohn Cityliner	FTG-FTD	—	182	351	81¾	74	305	88¾	65	9.00—20	9.00—20	IR	T	13	75	54x3	60x3	214	—	2-3
14	Fitzjohn Cityliner	FTG-FTD	—	210	379	81¾	74	333	88¾	73½	10.00—20	10.00—20	IR	T	14	75	54x3	60x3	214	—	2-3
15	Fitzjohn Roadrunner	FIG-FID	—	201	384	80¼	71½	324	111	71	10.00—20	10.00—20	IR	L	15	142	AIR	AIR	250	—	2-3-4
16	Fitzjohn Roadrunner	FIG-FID	—	237	420	80¼	71½	360	111	80	11.00—20	11.00—20	IR	L	16	142	AIR	AIR	250	—	2-3-4
17	Flxible	218BL-56	15200	218	410¾	80¹¹⁄₁₆	69¾	300	117	72.0	9.00—20	9.00—20	IR	L	13	78	52x3	56x3	90	SM	ALL
18	Flxible	218F1-56	15600	218	410¾	80¹¹⁄₁₆	69¾	300	117	72.0	9.00—20	9.00—20	IR	L	14½	78	52x3	56x3	105	SM	ALL
19	Flxible	218GM1-56	15500	218	410¾	80¹¹⁄₁₆	69¾	300	117	72.0	9.00—20	9.00—20	IR	L	14½	78	52x3	56x3	125	SM	ALL
20	Flxible	218JBS1-56	15455	218	410¾	80¹¹⁄₁₆	69¾	300	117	72.0	9.00—20	0.00—20	IR	L	14½	78	52x3	56x3	105	SM	ALL
21	Flxible	228JT1-56	18200	228	419½	80⅛	71½	401½	111	66.6	10.00—20	10.00—20	IR	L	15¼	120	TORS	TORS	105	SM	ALL
22	Flxible	228FL-56	18200	228	419½	80⅛	71½	401½	111	66.6	10.00—20	10.00—20	IR	L	15¼	120	TORS	TORS	105	SM	ALL
23	Flxible-Twin	FT-30	14400	190¾	365	80⅛	71½	344	86¾	68.0	10.00—20	10.00—20	UF	—	15½	80	56x4	60x4	—	A	—
24	Flxible-Twin	FT-33	16000	222	403	80⅛	72	382	93½	76.0	10.00—20	10.00—20	UF	—	15¼	80	56x4	60x4	—	A	—
25	Flxible-Twin	FT-35	16700	232½	420	80⅛	72	399	100	70.0	10.00—20	10.00—20	UF	—	16	125	60x4	64x4	—	A	—
26	Flxible-Twin	FT-40	19800	274⅛	480	80⅛	72	459	117¾	80.0	11.00—20	11.00—20	UF	—	16½	125	60x4	64x4	—	A	—
27	Flxible-Twin	FT-40DL	19970	274⅛	480	80⅛	72	459	117¾	80.0	11.00—20	11.00—20	UF	—	16½	125	60x4	64x4	—	A	—
28	GMC	TGH3102	10110	180½	325⅝	81¼	75¼	287	76⅛	66	8.25—20	8.25—20	IR	T	6.8	60	52x3	59x3	H	H	ALL
29	GMC	TDH3714	16210	210½	369½	79¼	70½	336	76⅛	70	10.00—20	10.00—20	IR	T	10½	80	AIR	AIR	62	H	—
30	GMC	TDH4512	17860	238¾	420	78⅞	70½	389	100¾	78	10.00—20	10.00—20	IR	T	12½	80	AIR	AIR	62	H	—
31	GMC	TDM4515	19830	238¾	420	78⅞	70½	389	100¾	78	10.00—20	10.00—20	IR	T	12½	80	AIR	AIR	143	CM	ALL
32	GMC	TDH5105	19350	281¾	477	87¼	76½	441	110	82	11.00—20	11.00—20	IR	T	12½	80	AIR	AIR	62	H	—
33	GMC	TDH5106	19000	281¾	477	80⅞	70½	441	110	81	11.00—20	11.00—20	IR	T	12½	80	AIR	AIR	62	H	—
34	GMC	TDM5108	21390	281¾	477	80⅞	70½	441	110	81	11.00—20	11.00—20	IR	T	12½	80	AIR	AIR	143	CM	ALL
35	GMC	PD4104	20565	261	420	78⅞	70½	390	89¼	84	11.00—20	11.00—20	IR	T	14	140	AIR	AIR	143	CM	ALL
36	Mack	C-41	17800	237½	396	79¹¹⁄₁₆	70⅞	381	90	74	10.00—20	10.00—20	IR	T	16	75	AIR	AIR	229	H	ALL
37	Mack	C-47	18200	261½	420	79¹¹⁄₁₆	70⅞	405	80	79	10.00—20	10.00—20	IR	T	16	75	AIR	AIR	229	H	ALL
38	Mack	C-49	20200	289½	472	79¹¹⁄₁₆	70⅞	436	82¼	84	11.00—20	11.00—20	IR	T	16	75	AIR	AIR	229	H	ALL
39	Mack	C-49W	20450	289½	472	86⅛	77½	436	82¼	84	11.00—20	11.00—20	IR	T	16	75	AIR	AIR	229	H	ALL
40	Marmon-Herrington	4SC*	7840	178⅝	349⅝	80¼	69¼	—	—	53½	9.00—20	9.00—20	IR	L	6	60	56x3½	58x3½	—	CM	ALL
41	Marmon-Herrington	5SC*	7970	233⅛	404⅛	80¼	69¼	—	—	66⅛	9.00—20	9.00—20	IR	L	6	60	56x3½	58x3½	—	CM	ALL
42	Marmon-Herrington	6SC*	7900	205⅛	376¹¹⁄₁₆	80¼	69¼	—	—	60¼	9.00—20	9.00—20	IR	L	6	60	56x3½	58x3½	—	CM	ALL
43	Reo*	F120L	5870	187	329⅜	—	—	—	100⅝	30¼	8—22.5	8—22.5	FR	—	20	40	3x48	3x50	131	S	2-3-4
44	Reo*	F-120G	6185	219	357⅞	—	—	—	96⅜	34¼	9—22.5	9—22.5	FR	—	20	40	3x48	3x50	131	S	2-3-4
45	Reo*	F-120H	6320	238	384⅜	—	—	—	104⅝	37¼	9—22.5	9—22.5	FR	—	20	40	3x48	3x50	131	S	2-3-4
46	Reo*	F-122H	6715	238	384⅜	—	—	—	104⅝	37¼	9—22.5	9—22.5	FR	—	24	40	3x48	3x50	149	CM	3-4-5
47	Reo*	F-122J	6830	256	412⅜	—	—	—	114⅝	39½	9—22.5	9—22.5	FR	—	24	40	3x48	3x50	149	CM	3-4-5
48	Southern	S-41-HF	16300	221⅛	391½	80¼	72	377½	99	80	11.00—20	11.00—20	UF	—	18	114	62x3½	70x4	170	H	ALL
49	Southern	S-45-DHC	19790	232⅛	419	79⅛	72	404	115	84½	11.00—22	11.00—22	UF	—	21	114	62x3½	70x4	229	H	ALL
50	Southern	S-50-DHC	21310	275⅛	461½	86⅞	72	447	115	82½	11.00—22	11.00—22	UF	—	21	114	AIR	AIR	229	H	ALL

KEY TO ABBREVIATIONS

Engine Location
IR – Inside body at rear
U –F Under floor of body
FR - Front

Type Transmission
CM – Constant Mesh
HG – Helical Gear
A – Automatic
H – Hydraulic
M – Manual

Steering Gear Type
C&L – Cam and Lever
TL – Ross Twin-Lever
W&R – Worm and Roller

Seat Filler Material
CHF – Cotton & Hair Felt
R – Rubber
S – Spring

Seat Make
A – Adams & Westlake
E – Edwards
V – Visionator

Seat Make
AM – American
HW – Heywood-Wakefield
N – National

Heating, Ventilation and Air Conditioning
E – Evans Products
H – Hans
K – Kysor
Lin – Linter
M – Mack
T – Tropic-Aire-Carrier

Type Floor Covering
A – Armstrong Linoleum
AT – Armstrong Automat
R – Rubber
RB – Rub-Rub

General Characteristics

TRANSMISSION						STEERING		BODY DETAILS																		
Type Transmission Control	Reduction Ratio		Number Universals	Rear Axle		Type Steering Gear	Manual Hydraulic Air	Max.-Min. Seat Capacity	Min. Head Room Over Aisle (Inches)	Aisle Width at Seat Cushions (Inches)	Body Frame Material	Body Panel Material	Headlining Material	Roof Material	Insulation Material Side Walls	Make Heating and Ventilating System	Total Heater Output—B.t.u. thousands	Make—Air Condition	Make Interior Lightning Fixtures	Make & Type Floor Covering	Make Window Sash	Seat Make	Seat Filler Material	Seat Upholstery Material	Door Control	Exit Door Location	Line
	Low	High		Angle of Pinion Shaft (Deg.)	Total Reduction Ratio in High Gear																						
M	5.19	1	2	—	4.11	TL	AIR	45	76	16	S	AL	M-R	AL	FG	T	—	T	LU	RB	E	N	R	M	M	—	1
M	4.43	1	2	—	4.44	TL	M	37	76½	16	S	AL	M-R	AL	FG	H	—	T	CM	RB	E	N	R	M	M	—	2
M	4.43	1	2	—	4.62	TL	M	41	76½	16	S	AL	M-R	AL	FG	T	—	T	CM	RB	E	N	R	M	M	—	3
M	—	—	2	—	6.2	WR	M	25-17	76	17	S	S	S	S	FG	OPT	47.5	—	OPT	AT	OWN	OWN	CHF	Ko	V	RR	4
M	—	—	2	—	6.2	WR	M	25-17	76	17	S	S	S	S	FG	OPT	47.5	—	OPT	AT	OWN	OWN	CHF	Ko	V	RR	5
M	8.08	1.00	2	3	4.625	C & L	M	37	74½	12½	S	AL	P	AL	FG	K	75	NONE	LU	RB	E	AM	R	M	MI	RF	6
M	8.08	1.00	2	3	4.625	C & L	M	41	74½	12½	S	AL	P	AL	FG	K	75	NONE	LU	RB	E	AM	R	M	MI	RF	7
M	7.33	1.00	2	3	4.111	C & L	H	41	74½	12½	S	AL	P	AL	FG	K	75	NONE	LU	RB	E	AM	R	M	MI	RF	8
M	7.33	1.00	2	3	4.111	C & L	H	41	74½	12½	S	AL	P	AL	FG	K	75	NONE	LU	RB	E	AM	R	M	MI	RF	9
M	8.03	1.00	2	3	6.167	C & L	M	67	76	12	S	AL	P	AL	No	K	53	NONE	KD	A	OWN	OWN	CFS	D	MI	RF	10
M	7.33	1.00	2	3	4.111	C & L	M	79	76	12	S	AL	P	AL	No	K	53	NONE	KD	A	OWN	OWN	CFS	D	MI	RF	11
M	4.06	1.04	2	3	6.167	TL	M	27-31	76½	22	S	AL	M	AL	FG	K	80	—	G	A-AT	A	AM	S	IL	AE	LC	12
M	4.06	1.04	2	3	6.167	TL	M	31-35	76½	22	S	AL	M	AL	FG	K	80	—	G	A-AT	A	AM	S	IL	AE	LC	13
M	4.06	1.04	2	3	6.167	TL	M	35-39	76½	22	S	AL	M	AL	FG	K	80	—	G	A-AT	A	AM	S	IL	AE	LC	14
M	4.88	1.00	2	3	4.45	TL	M	33-37	75½	14¼	S	AL	R	AL	FG	K	95	T	LU	A	A	N	R	M	M	LC	15
M	4.88	1.00	2	3	4.45	TL	M	37-41	75½	14¼	S	AL	R	AL	FG	K	120	T	LU	A	A	N	R	M	M	LC	16
M	4.62	1.00	2	5	6.17	C & L	M	29-33	78¼	16	S	S & AL	M	AL	FG	K	70	OWN	OWN	AT-A	E	OWN	R	M	M	RF	17
M	4.62	1.00	2	3¼	4.62	C & L	M	29-33	78¼	16	S	S & AL	M	AL	FG	K	70	OWN	OWN	AT-A	E	OWN	R	M	M	RF	18
M	4.62	1.00	2	3¼	4.62	C & L	M	29-33	78¼	16	S	S & AL	M	AL	FG	K	70	OWN	OWN	AT-A	E	OWN	R	M	M	RF	19
M	5.08	.78	2	3¼	5.28	C & L	M	29-33	78¼	16	S	S & AL	M	AL	FG	K	70	OWN	OWN	AT-A	E	OWN	R	M	M	RF	20
M	4.50	.835	2	4	5.28	C & L	M	37-45	75¼	15½	HTS	AL	SA	AL	FG	OWN	110	OWN	OWN	A	E	OWN	R	M	M	RF	21
M	5.08	.78	2	4	6.17	C & L	M	37-45	75¼	15½	HTS	AL	SA	AL	FG	OWN	110	OWN	OWN	A	E	OWN	R	M	M	RF	22
A	5.43	1.1	2	1½	6.17	C & L	M	36	78	23	S	AL	M-SA	AL	FG	HANS	120	—	LU	RB	OWN	OWN	R	Ko	A	FR	23
A	5.43	1.1	2	1½	6.83	C & L	M	40	78	23	S	AL	M-SA	AL	FG	HANS	120	—	LU	RB	OWN	OWN	R	Ko	A	FR	24
A	5.43	1.1	2	1½	6.83	C & L	M	44	78	23	S	AL	M-SA	AL	FG	HANS	120	—	LU	RB	OWN	OWN	R	Ko	A	FR	25
A	5.43	1.1	2	1½	6.83	C & L	M	52	78	23	S	AL	M-SA	AL	FG	HANS	120	—	LU	RB	OWN	OWN	R	Ko	A	FR	26
A	5.43	1.1	2	1½	6.17	C & L	M	52	78	23	S	AL	M-SA	AL	FG	HANS	120	—	LU	RB	OWN	OWN	R	Ko	A	FR	27
A	3.82	1.00	2	3½	6.71	RB	M	31	76½	20	S	S-AL	M	AL-S	—	OWN	61	—	LU	R	V	OPT	OPT	OPT	A	FR	28
A	H	H	2	8½	5.37	RB	M	37	76⅛	20	AL	AL	D	AL-S	PBF	OWN	90	—	LU	R	V	OPT	OPT	OPT	A	FR	29
A	H	H	2	7	4.90	RB	M	45	76⅛	20	AL	AL	D	AL-S	PBF	OWN	90	—	LU	R	V	OPT	OPT	OPT	A	FR	30
M4	4.36	1.00	2	7	3.875	RB	M	45	76⅛	15	AL	AL	D	AL-S	PBF	OWN	101	—	LU	R	E	OPT	OPT	OPT	A	—	31
A	H	H	2	7	5.37	RB	M	51	76⅛	26	AL	AL	D	AL-S	PBF	OWN	90	—	LU	R	V	OPT	OPT	OPT	A	FR	32
A	H	H	2	7	5.37	RB	M	51	76⅛	20	AL	AL	D	AL-S	PBF	OWN	90	—	LU	R	V	OPT	OPT	OPT	A	FR	33
M4	4.36	1.00	2	7	4.125	RB	M	51	76⅛	15	AL	AL	D	AL-S	PBF	OWN	126	—	LU	R	E	OPT	OPT	OPT	A	—	34
M4	3.86	1.00	2	3	4.125	C & L	M	41	75½	14¼	AL-S	AL	M	AL	FG	OWN	135	—	LU	R	V	OPT	OPT	OPT	M	—	35
A	IV	1.29	2	52	6.16	W & R	OPT	41	76½	21	HTS	AL	AL-M	AL-S	—	M	—	—	ES	RB	OPT	OPT	OPT	OPT	EP	FR	36
A	IV	1.29	2	52	6.16	W & R	OPT	45	76½	21	HTS	AL	AL-M	AL-S	—	M	—	—	ES	RB	OPT	OPT	OPT	OPT	EP	FR	37
A	IV	1.29	2	52	6.16	W & R	OPT	49-51	76½	21	HTS	AL	AL-M	AL-S	—	M	—	—	ES	RB	OPT	OPT	OPT	OPT	EP	FR	38
A	IV	1.29	2	52	6.16	W & R	OPT	49-51	76½	27	HTS	AL	AL-M	AL-S	—	M	—	—	ES	RB	OPT	OPT	OPT	OPT	EP	FR	39
M	7.58	DIR	2	3	7.2	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40
M	7.58	DIR	2	3	7.2	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41
M	7.58	DIR	2	3	7.2	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
LEV	6.40	1	2	—	6.8	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43
LEV	6.40	1	2	—	6.8	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44
LEV	6.40	1	2	—	6.8	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	45
LEV	7.58	1	2	—	6.8	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46
LEV	7.58	1	2	—	6.8	TL	M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	47
A	H	H	2	—	6.83	C & L	M	41	78	22	HTS	AL	SA	AL	FG	OWN	—	—	ES	RB	OWN	OWN	OPT	Ko	A	FR	48
A	H	H	2	—	6.83	C & L	H	45	77	22	HTS	AL	SA	AL	FG	OWN	—	—	ES	RB	OWN	OWN	OPT	Ko	A	FR	49
A	H	H	2	—	6.83	C & L	H	50	77	22	HTS	AL	SA	AL	FG	OWN	—	—	ES	RB	OWN	OWN	OPT	Ko	A	FR	50

Type Door Control
M – Manual A – Air
AE – Air Electric
EP – Electro-pneumatic
MI – Midland

Door Location
FR – Ahead rear axle
LC – Left rear center
RC – Right center
RF – Right front

Body Panel Material
AL – Aluminum
S – Steel

Headlining Material
For. – Formica
M – Masonite
Mar – Marlite
P – Pronite
R – Roylite
SA – Sheet Aluminum

Lighting Fixtures
CM – Columbia Metal Prod.
G – Guide
ES – Electric Service
KD – KD Lamp
Lu – Luminator

Insulating Material
F – Felt
Fg – Fibreglas
PBF – Paper Black Foil

Seat Upholstery Material
IL – Imitation Leather
Ko – Koroseal
L – Leather
M – Mohair

Body Frame Material
Al – Aluminum
HTS– High Tensile Sheet
S – Steel

1956 Motor Bus

Line	TRADE NAME	MODEL NUMBER	HORSEPOWER DATA				CYLINDERS						VALVES								
																		Tappet Clearance Cold		Material	
			Max. B.H.P. at Governed Speed	Governed R.P.M.	Max. Torque Lb. Ft.	R.P.M. at Max. Torque	No. Cylinders	Bore (Inches)	Stroke (Inches)	Piston Displacement (Cu. In.)	Standard Compression Ratio	Are Other Compression Ratios Available	Lower Crankcase Material	L or Overhead	Inserted Seat Facing Material	How are Inserts Secured in Block	Lift (Inches)	Intake	Exhaust	Intake	Exhaust
GASOLINE and L P G																					
1	Continental	K6330	147	3200	274	2000	6	4	4⅛	330	6.4	Yes	PS	O	STL	S	4664	.018	.022	SIL	SF
2	Continental	T6427	180	3200	356	1400	6	4⅜	4⅛	427	6.4	Yes	PS	O	STL	S	4460	.018	.022	SIL	SF
3	Continental	U6501	178	2600	414	1200	6	4½	5¼	501	6.12	Yes	PS	O	STL	S	⅛	.018	.024	SIL	SF
4	Continental	R6572	220	2800	464	1200	6	4¼	5⅛	572	6.13.1	Yes	PS	O	STL	S	½	.018	.024	SIL	SF
5	Fageol-Gasoline	FTC-180	180	2400	360	1600	6	4¼	4¾	404	7.50	—	AL	I	STL	P	.388	.015	.018	2112	2112
6	Fageol-Gasoline	FTC-200	200	2400	400	1600	6	4⅜	5	451	7.29	—	AL	I	STL	P	.388	.015	.018	2112	2112
7	Fageol-Gasoline	FTC-210	210	2400	480	1600	6	4½	5	477	7.09	—	AL	I	STL	P	.388	.015	.018	2112	2112
8	Fageol-Propane	FTC-180	180	2400	360	1600	6	4¼	4¾	404	9.6	—	AL	I	STL	P	.388	.015	.018	2112	2112
9	Fageol-Propane	FTC-200	200	2400	400	1600	6	4⅜	5	451	9.5	—	AL	I	STL	P	.388	.015	.018	2112	2112
10	Fageol-Propane	FTC-210	210	2400	480	1600	6	4½	5	477	9.0	—	AL	I	STL	P	.388	.015	.018	2112	2112
11	Fageol-Gasoline	FAGEOL "44"	26.5	5200	331	3300	4	2½	2¼	44	7.8 to 9	—	AL	L	STL	P	.234	.004	.007	2112	2112
12	Flxible-Buick	218BI-56	144	3600	278	2200	8	3⅞	4⅛	320	6.3	No	PS	I	No	—	.347	.015	.015	3140	XCR
13	Ford-Marmon-H	ECT-2V	182	3400	310	2200	8	3.8	3.66	332	7.5	No	PS	I	TC	P	X	.009	.021	SA	SA
14	GM Coach	270	125	3400	232	1-2000	6	3⅝	4	269.5	7.5	No	PS	I	No	—	395	.012	.020	.8640	XIL
15	Hall-Scott	H190-2-3-5	220	2200	625	1300	6	5¼	6	779	6.	Yes	AL	O	—	—	.482	.021	.021	S.A.	SF
16	Hall-Scott	H504	192	2500	445	1800	6	4¾	5	504	6.5	Yes	AL	O	STL	S	.450	.025	.025	SIL	SF
17	Hall-Scott	590GV3	232	2800	510	1600	6	5	5	590	6.7	Yes	S	O	STL	S	.500	.016	.016	SIL	SF
18	Hall-Scott	590BV1	246	2800	510	1600	6	5	5	590	8.7	Yes	S	O	STL	S	.500	.016	.016	SIL	SF
19	Hall-Scott	590GH-1	232	2800	510	1600	6	5	5	590	6.7	Yes	AL	O	STL	S	.500	.016	.016	SIL	SF
20	Hall-Scott	590BH-1	246	2800	510	1600	6	5	5	590	8.7	Yes	AL	O	STL	S	.500	.016	.016	SIL	SF
21	Hercules	QXLD	52	3200	190	1400	6	3⅞	4¼	236.7	6.5	Yes	PS	L	No	X	.311	.008	.010	2112	2112
22	Hercules	JXD	113	3000	240	1200	6	4	4¼	320	6.5	Yes	PS	L	No	X	.356	.008	.010	3140	2112
23	Hercules	JXLD	131	3200	272	1400	6	4	4½	339	6.9	Yes	PS	L	No	X	.356	.010	.010	2112	2112
24	Hercules	WXLC3	139	2600	312	1300	6	4¼	4¾	404	6.6	Yes	PS	L	No	X	.388	.012	.016	2112	2112
25	Hercules	TDXB	161	2600	366	1300	6	4⅜	5¼	474	6.5	Yes	PS	L	No	X	.388	.010	.016	2112	2112
26	Hercules	TDXC	170	2600	388	1300	6	4½	5¼	501	6.6	Yes	PS	L	No	X	.388	.010	.016	2112	2112
27	Hercules	RXC	143	2400	372	1100	6	4⅜	5¼	529	6.5	Yes	PS	L	No	X	.388	.010	.016	3140	2112
28	Hercules	RXLDH	181	2600	443	1400	6	4¼	5¼	558	6.5	Yes	AL	L	No	X	.442	.010	.016	8645	2112
29	Hercules	HXC	175	2000	555	900	6	5¼	6	779	5.75	Yes	PS	L	No	X	.469	.010	.016	3140	2112
30	Hercules	HXD	202	2000	645	900	6	5½	6	855	5.75	Yes	PS	L	No	X	.469	.010	.016	3140	2112
31	Hercules	HXLC	240	2400	600	1400	6	5¼	6	779	6.4	Yes	PS	L	No	X	.500	.010	.016	3140	2112
32	Hercules	HXLD	252	2400	698	1400	6	5½	6	855	6.4	Yes	PS	L	No	X	.500	.010	.016	3140	2112
33	Hercules	HXLE	272	2400	760	1400	6	5¾	6	935	6.4	Yes	PS	L	No	X	.500	.010	.016	3140	2112
34	Reo	255 O.A.	107	3400	189	1100	6	3⅝	4½	255	6.7	No	CIA	O	SA	S	.420	.015	.015	SIL	2112
35	Reo	292 O.A.	124	3300	224	1400	6	3⅞	4½	292	6.55	No	CIA	O	STL	S	.420	.015	.015	SIL	So
36	Reo	331 O.A.	140	3200	264	1600	6	4⅛	4½	331	6.4	No	CIA	O	STL	S	.420	.015	.015	SIL	So
DIESELS																					
37	Cummins	JN-6-B	125	2500	290	1800	6	4⅛	5	401	15.8	No	CIA	O	STL	S	—	—	—	SA	STL
38	Cummins	JBS-600	150	2500	352	1650	6	4⅛	5	401	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
39	Cummins	JNS-600	165	2500	394	1650	6	4⅛	5	401	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
40	Cummins	JT-6-B	175	2500	407	1700	6	4⅛	5	401	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
41	Cummins	HRB-600	165	1800	518	1300	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
42	Cummins	HRFB-600	180	2000	550	1350	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
43	Cummins	NHB-600	200	2100	706	1300	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
44	Cummins	NHHB-600	200	2100	706	1300	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
45	Cummins	NT-6-B	250	2100	695	1500	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
46	Cummins	NHHT-6-B	250	2100	695	1500	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
47	Cummins	NRT-6-B	335	2100	895	1500	6	5⅛	6	743	14.2	No	CIA	O	STL	S	—	—	—	SA	STL
48	Cummins	NHHRT-6-B	335	2100	895	1500	6	5⅛	6	743	14.2	No	CIA	O	STL	S	—	—	—	SA	STL
49	Cummins	HHRFB-600	180	2000	550	1350	6	5⅛	6	743	15.5	No	CIA	O	STL	S	—	—	—	SA	STL
50	Fageol Leyland	FLDH-600	160	2400	452	1200	6	4.8	5.5	597	15.75	No	AL	O	STL	S	.5	.020	.020	STL	STL
51	GM-Diesel	4-71 (70)	143	2100	375	1600	4	4¼	5	284	17:1	No	PS	I	CA	P	.384	PORT	.008	—	S
52	GM-Diesel	6-71 (60)	172	2000	496	1200	6	4¼	5	426	17:1	No	PS	I	CA	P	.384	PORT	.008	—	S
53	GM-Diesel	6-71 (70)	211	2000	574	1600	6	4¼	5	426	17:1	No	PS	I	CA	P	.384	PORT	.008	—	S
54	Hercules	DIX6-D	93	3000	186	1800	6	3⅜	4	248	15.5	No	AL	I	No	—	.350	.010	.010	CN	SIL
55	Hercules	DIX6-272	102	3000	204	1800	6	3 11/16	4½	272	15.5	No	AL	I	No	—	.350	.010	.010	CN	SIL
56	Hercules	DJXH	99	2600	234	1400	6	3¾	4½	298	15.5	No	PS	I	TS	S	½	.010	.010	CN	SIL
57	Hercules	DIXV8-402	160	3000	310	1800	8	4	4	402	15.0	No	AL	I	TS	S	.347	.016	.016	CN	SIL
58	Hercules	DWXLD	142	2600	333	1600	6	4¼	5	426	15.5	No	AL	I	TS	S	21/64	.016	.016	CN	SIL
59	Hercules	DWXLDF	142	2600	319	1400	6	4¼	5	426	15.5	No	AL	I	TS	S	21/64	.016	.016	CN	SIL
60	Hercules	DRXB	134	2200	358	1200	6	4⅜	5¼	474	15	No	AL	I	No	—	21/64	.016	.016	CN	SIL
61	Hercules	DRX-501	139	2200	388	1500	6	4½	5¼	501	15	No	AL	I	No	—	.390	.016	.016	CN	SIL
62	Hercules	DRX-C	147	2200	395	1200	6	4⅝	5¼	529	15	No	AL	I	No	—	21/64	.016	.016	CN	SIL
63	Hercules	DFXD	217	2100	645	1200	6	5½	6	855	14.8	No	PS	I	TS	S	½	.010	.016	CN	SIL
64	Hercules	DFXE	228	2100	680	1200	6	5⅝	6	895	14.8	No	PS	I	TS	S	½	.010	.016	CN	SIL
65	Hercules	DFXETS	318	2000	846	1800	6	5⅝	6	895	14.8	No	PS	I	TS	S	½	.010	.016	CN	SIL
66	Hercules	DFXH	260	2100	750	1200	6	5¾	6	935	14.8	No	PS	I	TS	S	½	.010	.016	CN	SIL
67	Hercules	DFXHF	260	2100	750	1200	6	5¾	6	935	14.8	No	AL	I	TS	S	½	.010	.016	CN	SIL
68	Mack	END673	170	2100	480	1200	6	4⅞	6	672	16.59	—	CIA	O	PN	P	.5625	.016	.024	C SIL	SBLT
69	Mack	END673	205	2100	560	1500	6	4⅞	6	672	16.59	—	CIA	O	PN	P	.5625	.016	.024	C SIL	SBLT

KEY TO ABBREVIATIONS

X – Information not given by manufacturer.

Valve Arrangement
I or O – Valves in head
L – Valves in block

Valve Inserts
P – Press fit
S – Shrunk

Main and Connecting Rod Bearings
D – Steel backed Durex
SB – Steel-backed babbitt
SCL – Steel-backed copper-lead
Tri-M – Tri-Metal

Points Fed By Pressure
A – Auxiliary Shaft
C – Camshaft
D – Accessory Drive
I – Idler Shaft Bearing
L – Valve Lifters
M – Main Bearings
R – Connecting Rods
T – Tappets
TG – Timing Gear

V – Valve Rocker Arms
W – Wrist Pins

Wrist Pin Bearing Location
F – Floating

Engine Specifications

PISTONS							CONNECTING RODS					CRANKSHAFT										LUBRICATION SYSTEM				
		Wrist Pins			No. Rings			Bearings							Main Bearings											
Piston Material	Length (Inches)	Diameter (Inches)	Length (Inches)	Bearing Location	Compression	Oil	Length	Type Material	Diameter (Inches)	Length (Inches)	Number Brgs.	Overall Length Shaft (Inches)	Weight of Crankshaft and Counterweights	Number of Counterweights	Number	Type Material	Diam. Main Bearings	Total Length Main Bearings	Projected Area Main Bearings (Sq. In.)	At What Point is Thrust Taken	Total Oil Capacity—Qts.	Points Fed By Pressure	Engine Weight Without Accessories	Line
AL	4¼	1⅞	3.43	F	3	2	8⅛	SCL	2⅜	1⅜	6	35⅞	—	—	7	SCL	2¾	12½	31	1ST	7	C-M-R-TG-V	850	1
AL	4	1⅛	3.43	F	3	2	8⅛	SCL	2½	1	6	39	—	—	7	SCL	2⅞	13½	38	1ST	8	C-M-R-TG-V	990	2
AL	5	1½	3.72	F	3	2	10½	SCL	2¾	1⅜	6	40⅞	—	—	7	SCL	2¾	14½	38	1ST	12	C-M-R-TG-V	1290	3
AL	5	1½	3.72	F	3	2	10½	SCL	3	1	6	46	—	—	7	SCL	3¼	14½	47½	1ST	14	C-M-R-TG-V	1525	4
AL	4⅞	1.25	3.62	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	140	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	952	5
AL	4⅞	1.25	3.62	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	137½	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	952	6
AL	4⅞	1.25	3.87	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	137½	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	952	7
AL	4⅞	1.25	3.62	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	140	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	952	8
AL	4⅝	1.25	3.62	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	137½	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	952	9
AL	4⅝	1.25	3.87	P	2	2	8⅛	SCL	2.651	1.467	12	39⅝	137½	12	7	SCL	2.625	10.014	96.9	C MAIN	20	M-R-C-D-V-L-TG	950	10
AL	1	⅛	2⅛	P	2	2	4½	D	1⅜	1	8	15	13½	8	5	D	1½-1⅝	5¾	25.9	R MAIN	3	M-R-T-G-C	150	11
AL	4	.8749	3	P	2	2	8¼	D	2¼	1	5	41	—	—	5	D	2¼	7.15	—	3RD	16	C-M-R-T-V	862	12
AL	3.6	.9125	X	F	2	2	7.065	SCL	2¼	.789	—	26.88	6.5	6	3	SCL	2.625	4.21	11.15	3RD	9	C-M-R-T-AV	890	13
AL	4.21	.990	3.250	F	3	1	7	M400	2	1½	12	33¼	85	9	4	M400	2.715	5	14.97	3RD	8	C-M-R-TG-V-W	535	14
AL	6.193	1.37	4.12	F	3	3	11	SCL	2.75	2.18	6	47	203	4	7	SCL	3.25	12.56	40.8	RB	24	A-C-I-M-R-T-V	1870	15
AL	5.39	1.12	3.98	F	2	2	11	SCL	2.625	1.76	6	44	125	4	7	SCL	3.0	11.9	35.7	RB	18	A-C-I-M-R-T-V	1275	16
AL	5.86	1.50	4.43	P	2	1	9	SCL	3.0	2.09	6	42	152	12	7	SCL	3.25	13.26	43	RB	16	A-C-I-M-R-T-V	1149	17
AL	6.46	1.50	4.43	P	2	1	9	SCL	3.0	2.09	6	42	152	12	7	SCL	3.25	13.26	43	RB	16	A-C-I-M-R-T-V	1149	18
AL	5.86	1.50	4.43	P	2	1	9	SCL	3.0	2.09	6	42	152	12	7	SCL	3.25	13.26	43	RB	16	A-C-I-M-R-T-V	1149	19
AL	6.46	1.50	4.43	P	2	1	9	SCL	3.0	2.09	6	42	152	12	7	SCL	3.25	13.26	43	RB	16	A-C-I-M-R-T-V	1149	20
AL	3	⅞	2	P	2	2	7	Tri-M	2	1¼	—	29½	46	12	7	Tri-M	2½	10	25.15	7TH	6	M-R-T-TG-I	445	21
AL	4	1½	3	F	2	2	8	Tri-M	2	1½	—	33	72	12	7	Tri-M	2½	10.81	27.02	7TH	9	M-R-T-TG-I-W	605	22
AL	4	1½	3	F	2	2	8	Tri-M	2	1½	—	33	79	12	7	Tri-M	2½	10.81	27.02	7TH	9	M-R-T-TG-I-W	630	23
AL	4⅛	1½	3	F	2	2	8⅛	Tri-M	2½	1½	—	37	107	12	7	Tri-M	2¾	13.25	34.78	7TH	7	M-R-T-TG-I	825	24
AL	4⅛	1	3½	F	2	2	9⅛	Tri-M	2½	2	—	41½	154	12	7	Tri-M	3	13.25	39.75	7TH	10	M-R-T-TG-I	1220	25
AL	4	1	3½	F	2	2	9⅛	Tri-M	2½	2	—	41½	154	12	7	Tri-M	3	13.25	39.75	7TH	10	M-R-T-TG-I	1230	26
AL	4	1¼	4	P	4	1	9⅛	Tri-M	2¾	2	—	41½	154	12	7	Tri-M	3	13.25	39.75	7TH	10	M-R-T-TG-I	1010	27
AL	4	1½	4.115	F	2	2	9⅛	Tri-M	3	2	—	41½	162.5	12	7	Tri-M	3½	13.25	46.37	7TH	13	M-R-T-TG-I	1320	28
AL	6	1½	4	P	3	1	12	SCL	3	1	—	50	274	12	7	SCL	3½	16.62	58.17	7TH	14	M-R-T-TG-I	1810	29
AL	6½	1½	4	F	3	1	12	SCL	3	2¼	—	50	270	12	7	SCL	3½	16.62	58.17	7TH	14	M-R-T-TG-I	1830	30
AL	6½	1¾	4	P	2	2	12	SCL	3	2¼	—	50	—	12	7	SCL	3¾	16.62	16.62	7TH	14	M-R-T-TG-I	2360	31
AL	6½	1¾	4¾	P	2	2	12	SCL	3	2¼	—	50	—	12	7	SCL	3¾	16.62	16.62	7TH	14	M-R-T-TG-I	2370	32
AL	6½	1¾	5	P	2	2	12	SCL	3	2¼	—	50	—	12	7	SCL	3¾	16.62	16.62	7TH	14	M-R-T-TG-I	2380	33
AL	4	1⅛	3.110	F	2	2	7¼	SB	2.1708	1.382	6	38.125	80	4	7	SCL	2.5	9.408	23.592	FRONT	8	M-R-C-V-T-G	830	34
AL	4½	1⅛	3.110	F	2	2	7¼	SCL	2.1708	1.382	6	38.125	80	4	7	SCL	2.5	9.408	23.592	FRONT	8	M-R-C-V-T-G	870	35
AL	4½	1⅛	3.590	F	2	2	7¼	SCL	2.1708	1.382	6	38.125	80	4	7	SCL	2.5	9.408	23.592	FRONT	8	M-R-C-V-T-G	872	36
AL	4.94	1.50	3.37	F	3	1	9.50	SCL	2⅛	1.66	6	—	—	—	7	SCL	3.88	7.8	30.24	7TH	12½	C-M-R-T-TG-V	1450	37
AL	4.75	1.50	3.37	F	3	1	9.50	SCL	2⅛	1.66	6	—	—	—	7	SCL	3.88	7.8	30.24	7TH	12½	C-M-R-T-TG-V	1545	38
AL	4.94	1.50	3.37	F	3	1	9.50	SCL	2⅛	1.66	6	—	—	—	7	SCL	3.88	7.8	30.24	7TH	12½	C-M-R-T-TG-V	1545	39
AL	4.94	1.50	3.37	F	3	1	9.50	SCL	2⅛	1.66	6	—	—	—	7	SCL	3.88	7.8	30.24	7TH	12½	C-M-R-T-TG-V	1615	40
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2350	41
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2400	42
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2415	43
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2285	44
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2546	45
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2385	46
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2546	47
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2385	48
AL	6.25	1.99	4.34	F	3	1	12.00	SCL	3⅛	2¾	6	—	—	—	7	SCL	4.50	13.6	61.15	7TH	20	C-M-R-T-TG-V-W	2260	49
AL	6½	1.65	4.20	R	3	2	10½	Tri-M	3	2.20	6	45.9	—	12	7	Tri-M	3.5	14.25	49.87	CTR.	26	C-M-R-T-T-G-V	1600	50
CIA	6	1.50	3.62	F	4	2	10.125	S	2.750	1.781	8	34.937	130	4	5	Tri-M	3.50	5.625	19.69	5TH	21	A-CI-M-R-V-W	1380	51
CIA	6	1.50	3.62	F	4	2	10.125	S	2.750	1.781	12	46.437	163	4	7	Tri-M	3.50	7.625	27.57	7TH	25	A-CI-M-R-V-W	1700	52
CIA	6	1.50	3.62	F	4	2	10.125	S	2.750	1.781	12	46.437	163	4	7	Tri-M	3.50	7.625	27.57	7TH	25	A-CI-M-R-V-W	1700	53
AL	4	1¼	3	F	3	2	7¼	SCL	2⅛	1½	—	32	—	—	7	SCL	2¾	10.94	30	7TH	10	A-C-I-M-R-V-W	800	54
AL	4	1¼	3	F	3	2	7¼	SCL	2⅛	1½	—	32	—	—	7	SCL	2¾	10.94	30	7TH	10	A-C-I-M-R-V-W	900	55
AL	4⅞	1	3	F	4	2	8	SCL	2½	1	—	33	—	—	7	SCL	3	10.29	30.82	7TH	14	A-C-I-M-R-V-W	950	56
AL	4	1¼	3½	F	3	2	7¼	SCL	2⅛	1⅛	—	31	—	—	5	SCL	3½	7.62	26.7	3RD	12½	A-C-I-M-R-V-W	1050	57
AL	4	1½	3½	F	3	2	8½	SCL	2¾	1⅞	—	39	—	—	7	SCL	3½	11.59	40.5	7TH	15	A-C-I-M-R-V-W	1370	58
AL	4	1½	3½	F	3	2	8½	SCL	2¾	1⅞	—	39	—	—	7	SCL	3½	11.59	40.5	7TH	22	A-C-I-M-R-V-W	1325	59
AL	6	1⅛	3¼	F	4	2	9⅜	SCL	3	2	—	41	—	—	7	SCL	3½	13.25	46.4	7TH	15	A-C-I-M-R-V-W	1600	60
AL	6.84	1⅛	3.84	F	4	2	9⅜	SCL	3	2	—	41	—	—	7	SCL	3½	13.25	46.4	7TH	15	A-C-I-M-R-V-W	1600	61
AL	6	1⅛	3	F	4	2	9⅜	SCL	3	2	—	41⅜	—	—	7	SCL	3½	13.25	46.4	7TH	15	A-C-I-M-R-V-W	1600	62
AL	7	2	4	F	4	2	12	SCL	3	2½	—	53	—	—	7	SCL	4½	17	76.5	7TH	28	A-C-I-M-R-V-W	2500	63
AL	7	2	4	F	4	2	12	SCL	3	2½	—	53	—	—	7	SCL	4½	17	76.5	7TH	28	A-C-I-M-R-V-W	2500	64
AL	7	2	4	F	4	2	12	SCL	3	2½	—	53	—	—	7	SCL	4½	17	76.5	7TH	28	A-C-I-M-R-V-W	3000	65
AL	7	2	4	F	3	2	12	SCL	3	2½	—	53	—	—	7	SCL	4½	17	76.5	7TH	28	A-C-I-M-R-V-W	2600	66
AL	7	2	4	F	3	2	12	SCL	3	2½	—	53	—	—	7	SCL	4½	17	76.5	7TH	40	A-C-I-M-R-V-W	2600	67
AL	5	1⅛	4¼	F	3	2	11¼	SCL	3	1	6	44	208	12	7	SCL	4	10	41	4TH	22½	AC-M-R-V-W	1842	68
AL	5	1⅛	4¼	F	3	2	11¼	SCL	3	1	6	44	208	12	7	SCL	4	10	41	4TH	22½	AC-M-R-V-W	1898	69

P – In piston
R – In rod

Materials
AL – Aluminum Alloy not otherwise noted
C – Cast-iron
CA – Cast alloy EA-S
CIA – Cast Iron Alloy
CN – Chrome nickel
CS – Carbon steel
Du – Durachrome
MC – MChrome Steel
N – Nickel
PN – Nack permaflt nifferite
PS – Pressed steel
S – Steel not otherwise specified
SA – Steel Alloy
Sil – Silchrome
Sta – Stainless steel
So – Sodium
Stl – Stellite
SF – Stellite faced
TC – Tungsten Cobalt
TS – Tungsten Steel

Howjadoits

Handy Helper Tripod Eases Lug Removal

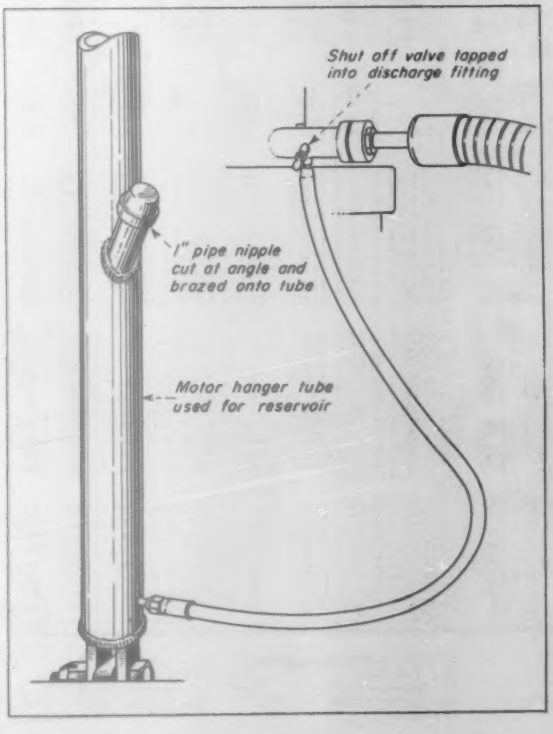
By Don Morrison
British Columbia Electric Railway Co.

• WHAT USED TO BE a two-man or a tough one-man job of removing or replacing Budd nuts on bus wheels has been simplified greatly at British Columbia Electric Railway Co. The helper tripod, shown being used by its designer, mechanic Don Morrison, does away with the need to block up one end of the wheel wrench—a project often hazardous if the support is shaky.

The tool also eliminates the need for another man to hold the wrench level with the nut.

From the safety standpoint, the tripod minimizes the chance of an accident that might be caused by the wrench slipping off the nut.

The frame is made of 1½-in. tubular steel with one extendable leg (forefront). Welded to extension leg are five metal brackets so that all ten nuts on a wheel may be reached without using usual five blocks of corresponding heights for the end of the wrench.


Shut off valve tapped into discharge fitting
1" pipe nipple cut at angle and brazed onto tube
Motor hanger tube used for reservoir

Engine Hanger Tube Used As Antifreeze Reservoir

By J. Lonner, H. Vigus, R. Rosevear
Butte City Lines

• A QUICK EASY METHOD of inserting antifreeze in air tanks to prevent compressors from freezing up "tight as a drum" has been developed in the cold weather country of Montana by three Butte City Lines employees.

They have made use of the motor hanger tube, filling it with antifreeze (Chanticleer Anti-Sludge) and adding an Aeroquip line and shut-off valve tapped into the compressor discharge fitting. With the tube as a reservoir it is no longer necessary to drain the air system to put in antifreeze.

To load the tube, a hole was burned in the tube and an angled one-in. pipe nipple was brazed onto the tube. A pipe cap closes the system.

In operation, as air pressure builds up in the hanger tube and the tube pressure exceeds the pressure in the compressor discharge fitting, the antifreeze is forced into the air system.

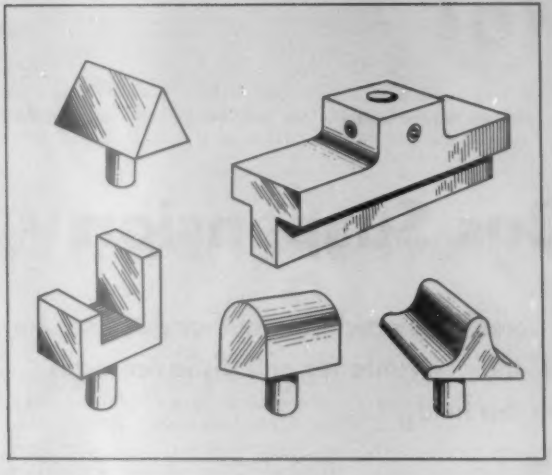
While the system is used on GM's at Butte City Lines, it is adaptable to other makes, too.

Battery Cart Ends Lifting

Used at New England Greyhound
(Now Eastern Division)

• AT NO TIME are batteries lifted by hand at New England Greyhound, now part of Greyhound's Eastern Division. Instead, this battery truck equipped with a hydraulic lift is used.

Charged batteries are simply pushed onto the cart and are lifted to the correct coach height by the hydraulic jack that serves as a lift. At battery tray height, the units are simply shoved into place and hooked up. The entire operation can be performed by one man.



Shaping Odd Parts

By Charles H. Willey
Penacook, N. H.

• ALMOST ALL mechanics have had to make a special shaped job at one time or another, form a part, rivet a special shape, put in a sharp bend or take out a dent.

For such work, here's a tool that can be infinitely valuable. It consists of a simple anvil, as shown in the sketch, that is held in the jaws of the vise.

Various shaped attachments are simply inserted in the anvil and are tightened in place by several Allen set screws.

Some of the "hardys" as they are sometimes called when used on the blacksmith anvil are milled to desired shape and some are sections of a differently shaped bar stock. All are fitted with a shank to fit in the vise block. A variety of shapes can be made up.

Crisco for Honing

By John H. Delperdang
Sioux Falls Transit Co.

• IF YOU FEEL in an experimental mood next time you hone cylinders, try some Crisco.

According to John H. Delperdang, who's been rebuilding engines of all kinds since 1909, it's the best preparation yet. He says it leaves a cleaner, better job and helps speed the process, too.

Delperdang rebuilds all engines for the Sioux Falls Transit Co. in South Dakota.

Incidentally, Delperdang found that not only does Crisco do the job better and faster, but that it is a good deal cheaper to use.

Venting Exhausts

By Charles H. Fischer
Lexington Railway System

• FLEXIBLE TUBING keeps the air clean at Lexington Railway System garages in Kentucky where they have purchased reels of 1¾-in. tubing and cut it into sections long enough to reach from inspection pits to garage walls.

The tubing is connected to the tail pipe of the bus when it is to be run, and poisonous fumes are channeled outdoors through a hole in the wall.

Since the tubing is flexible, it can be rolled up and placed against the garage wall out of the way when not in use.

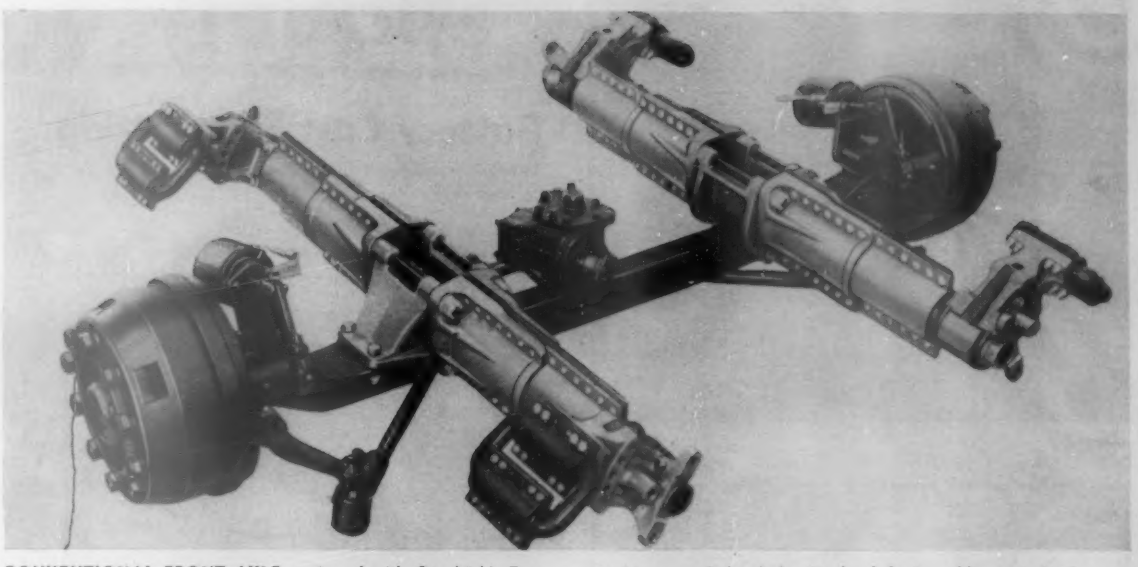
Cutting Sleeves

• IF YOU HAVE TROUBLE cutting off cylinder sleeves to the correct length for your engine blocks when the manufacturer doesn't provide a special cut length sleeve here's a tip.

Instead of using a hand or electric saw which often results in an uneven edge, use your brake drum lathe with a hubless drum attachment.

Insert the proper adapter to fit the ID of the sleeve and a ⅜ by 4 tool bit ground for cut-off purposes using the straight end of the tool bar.

In cutting, feed slowly and don't cut all the way through. Leave about .010 and after removing from the mandrel a slight tap will cause the excess to drop free.



CONVENTIONAL FRONT AXLE equipped with Goodrich's Torsilastic suspension unit has advantage over leaf spring in its ability to keep coach level despite load factors. However, torsion suspensions require separate axle positioning means as do others.

Bus Suspension —

In Part 2 of this three-part article the author discusses torsion suspensions, their advantages and disadvantages . . . what's in store in this field.

By Merrill C. Horine

EACH FORM OF SPRING has its own virtues and limitations and none is fully the equivalent of the other. The conventional leaf spring offers the simplest practical suspension system, lighter and less expensive to produce. By its curvature and the addition of auxiliary springs it offers some measure of progressive deflection rate. Limited damping effect is inherent and it is not subject to instantaneous and complete failure.

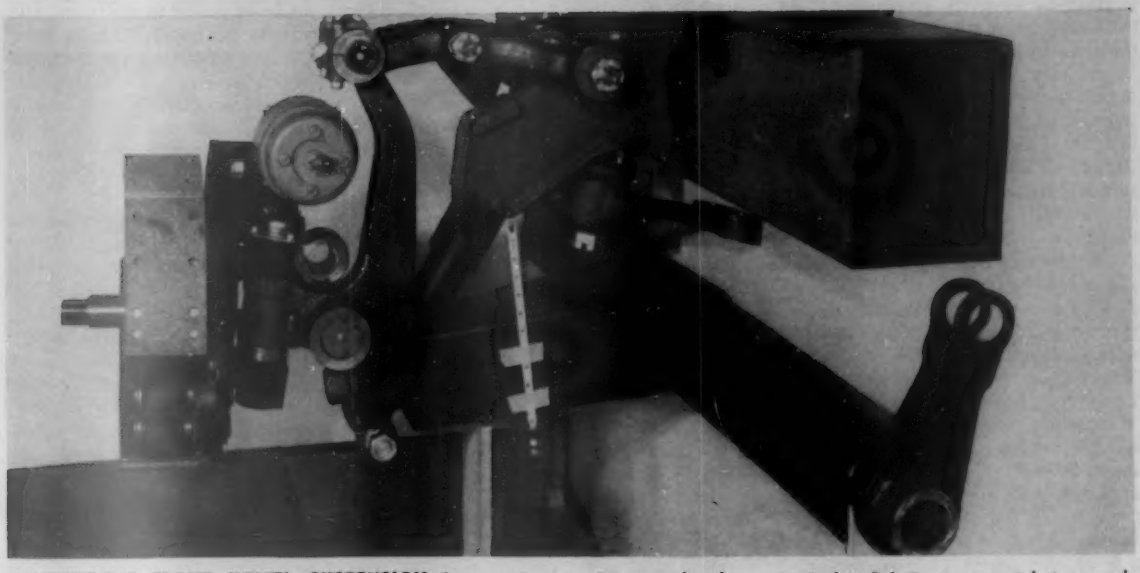
In none of its characteristics, however, does the conventional leaf spring suspension system measure up to the ideal which was defined in the previous installment of this article. Yet it is certainly possible that by the application of sufficient ingenuity its limitations may be overcome to a degree that will enable it to compete successfully with alternative systems.

Meanwhile other systems of suspension have been developed and are in the experimental stage which offer much promise. Aside from the familiar laminated leaf spring, two other types of steel springs are available, in addition to which rubber, air and liquid springs have been studied.

Coil springs are subject to the same laws which govern leaf springs and all other kinds, so far as the relationship between rate and frequency are concerned. They constitute mere elements in a suspension system and not, as with the case of leaf springs alone, a suspension system in themselves. The reason for their general adoption for front suspension of passenger cars is that by virtue of the wishbone arrangement associated with them, the positioning of the axle and the maintenance of correct steering knuckle angularity can be effected while permitting much softer springs than would be practicable with the conventional leaf spring arrangement. This is not by any means an exclusive characteristic of the coil spring, for the same effects could be secured by a freely-shackled leaf spring. The coil spring is used in such applications solely because of its compactness, lightness and low cost.

Unfortunately this front-end suspension system is not adapted to heavy vehicles, for the general huskiness essential to the support of the load gives leaf springs ample stiffness to maintain front axle alignment and the extra space required for the springs and wishbones could ill be afforded in bus construction. For rear axles, of course, there is even less to be gained. The extra complication involved in the axle positioning means which must be added to the coil spring, plus the sacrifice of the cushioning effect of Hotchkiss drive would be difficult to justify.

In heavier vehicles, the elaborate axle positioning members required



INDEPENDENT FRONT WHEEL SUSPENSION incorporates familiar Torsilastic tube. A thick rubber sleeve is bonded to an inner spool and an outer jacket. Relative movement between axle and frame causes rotative movement between spool, sleeve.

Where Is it Headed?

would assume massive proportions, so that in spite of the lighter weight of coil springs for a given capacity, the weight of the complete suspension would greately exceed that of the leaf-spring system. In passenger cars, the maintenance problem has been pretty well solved by the extensive use of rubber bushings. The same possibility of course exists in bus applications. As the elastic medium in a coil-spring system comprises a single piece of steel, fracture would result in complete and immediate failure. This is not true of the laminated structure of the leaf spring.

Torsion Bars • Possibilities of advantages beyond those offered by either leaf or coil springs seem to characterize the torsion-bar spring, as well as certain limitations. There is nothing in the action of the torsion bar as a primary elastic element which exempts it from the same laws which govern the action of the other two. Nor in its application does it offer much in the way of simplicity. It is still incapable of taking on the structural duties of the leaf spring.

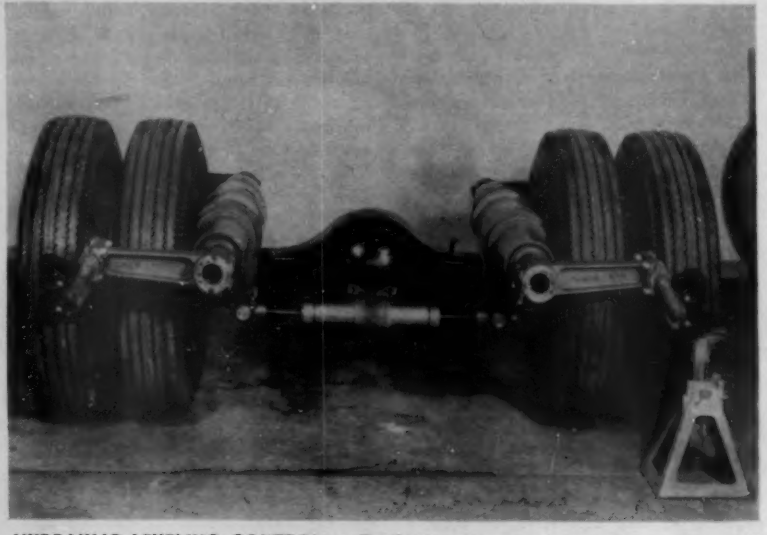
It does offer one advantage of great importance, however, and that is its adaptability to self-leveling.

In common with all other suspension systems so far proposed as alternatives to the leaf spring, the torsion bar requires separate axle positioning means. As with the coil spring, fracture of the bar results in complete and immediate failure.

Because of the torsional application of the load through a lever at the free end of the bar, a simple means is provided for varying the deflection rate of the spring to suit requirements. Thus, by so positioning the lever that it is at right angles to the direction of thrust under lightest loads, the lever arm is caused to constantly shorten as deflection increases, thus stiffening the suspension as the load becomes larger, a very handy means of securing almost any desired degree of progressive action.

As applied to buses heretofore, an-

Continued on next page



HYDRAULIC LEVELING CONTROL on Torsilastic rear suspension pumps or releases oil as load varies, keeping coach at pre-set height.

other feature was incorporated, described as "gravity suspension." In this arrangement, the links joining the ends of the levers at the free end of the bar to the axle were set at angles to each other so that the spring portion of the vehicle might swing pendulum-like to a small extent. By the proper angularity, this side-swing, instead of intensifying the tendency to sidesway, would have the opposite effect, since the crank-arm leverage on the outside of a turn or downside of a crowned road, could thus be made to decrease and that on the inside to increase, thus bringing additional resistance to deflection to the side toward which the weight was being transferred.

In application to individual axles, one end of the torsion bar is acted upon by the axle through the lever and link and the other end is fixed to a frame anchor. By providing a means such as a worm and wheel or a lever and adjustable rod, the fixed end of the torsion bar may be twisted, thereby reacting on the free end to raise or lower the standing height of the vehicle. In bus applications so far, this adjustment was of semi-permanent nature; but in the Packard automobile adaptation such adjustment is made by power automatically, so that the body of the vehicle is maintained a constant height above the road, regardless of load.

In the rubber-in-torsion and pneumatic suspension systems, discussed later, this automatic adjustment of height is incorporated. Its importance is so great that it may be predicted with confidence that any further work with torsion bar suspensions for buses will take full advantage of its possibilities.

The most important contribution to improvement in bus suspensions which have been made in late years is the automatic height and level adjustment, for at one stroke it resolves the problem of how to secure a low deflection rate with limited total deflection; in other words, how to get an easy ride with constant step height.

Coupled with this, of course, it is essential to secure the correct degree of progressive action of the elastic medium.

We have seen that only through high initial deflection (low deflection rate) can we assure the moderate oscillating frequency required for comfort; but that in a simple suspension system this requires such a large range of total deflection that the step height of the bus will vary excessively between no load and maximum load.

By means of automatic adjustment of height to load, however, we may lower the frame when the load is so light that it would tend to raise it and raise it when the load is so heavy that it would tend to lower it. This means that we may have a total range of deflection limited to that required to accommodate the inequalities of the road, while preserving the softness of ride heretofore associated only with maximum loads. In short we may tailor our ride in such a way that it will be as uniform as though there were no variations in load and have a constant step height at all loads.

In discussion of this feature, emphasis has been placed upon the self-leveling action, which is something else and possibly less important than the constant height feature. By self-leveling is meant correction for sidewise and fore-and-aft inclination relative to the road. Strictly speaking, this is not leveling at all, but merely parallelism with the road. Undeniably this, too, has its advantages.

Concentration of passengers at the front end of the bus tends to cause the front end to dip downward, while concentration at the rear similarly causes it to rear upwardly at the front. Also, on a sidewise inclination of the road, the bus tends to lean toward the lower side. By the self-leveling action, the bus remains on an even keel, relative to the road, irrespective of load distribution.

Rubber in Torsion • Rubber in many ways differs from steel in its elastic behavior. For one thing, it has much greater hysteresis, which means that it is self-damping to a greater extent and without dependence upon mechanical friction and without loss of sensitivity. Its action also differs markedly whether used in compression, tension or shear. Neither of the first two offers much for bus suspension because of the limited deflections feasible and the weight and cost of material involved.

It is in shear that rubber has manifested promising application to bus suspension. In such use, a thick rubber sleeve is bonded to an inner spool and an outer jacket, one which is fixed either to the axle or frame and the other, by means of a lever and link to the other member. Relative movement between axle and frame thus causes rotative movement between the spool and sleeve, subjecting the rubber sleeve to torsional shear. Various manners of application have been worked out. In some, the rubber elements are attached to the axle, with the lever linked to the frame and in others, to the frame, with the lever linked to the axle. In general, owing to its short, fat shape, the rubber unit is capable of assuming some share of the axle positioning duty and so is amenable to somewhat simpler application than the torsion bar or coil spring.

Because the fixed member of the rubber spring unit—the outer jacket may easily be arranged to rotate slightly, the rubber spring is readily adapted to constant height and self-leveling by various means. In the Goodrich Torsilastic system, lever arms secured to the jacket are controlled by hydraulic piston-and-cylinder units, governed by leveling valves linked between the axle and the frame. Oil under pressure is supplied by an electric-driven pump with an accumulator on the line and is valved into and out of the cylinders by the leveling valves.

These are set for a given height of the frame above the axle. An increase in load, tending to lower the frame height results in the valve lever being turned so that oil is admitted to the cylinder, which causes the piston to move outwardly, turning the rubber spring jacket against the torsion imposed by the axle link and thus raising the body. When the proper height has been attained, the leveling valve lever once more becomes horizontal and the oil in the cylinder is trapped until such time as the load factor changes, affecting height.

On a reduction of load, which would cause the vehicle to rise correspondingly, the reverse process ensues, the valve releasing enough oil from the cylinder to permit the rubber spring sleeve to unwind sufficiently to restore the body to normal height.

Rubber is somewhat affected by changes in temperature; but with the automatic height control just described, this is automatically compensated. Rubber has naturally great endurance under repeated stress. It actually thrives on continuous working and is at its worst when left idle for long periods.

In the next and concluding installment of this treatise, the latest type of bus suspension system to appear—the air spring—will be discussed. Although application to buses of pneumatic springs is relatively new, air springs *per se* have been known for a long time and numerous experimental applications have been made on passenger cars and in production on semitrailers.

What's New

SEMI DECK AND HALF BECK now being operated by Queen City Trailways of Charlotte, N. C., was designed to fill need for "in-between" coach in size and price. Major features include not-as-great difference in height of two levels . . . practical interior.

New Beck "Semi" in Production

A NEW STAR has been added to the growing fleet of deck-and-half cruisers now on the roads with the announcement by C. D. Beck & Co. that it is now producing a bus of semi deck-and-half design.

Seating 41 passengers, the new vehicle is termed a "semi" because, although it follows the general lines of the regular deck-and-half, the difference in levels in the interior is not as marked.

Designed primarily to fill the "in-between" need, the coach offers more in the way of baggage facilities and continues to give the passengers a high-level ride. The coach will also fill, the Beck Co. feels, the in-between need in price as well as size.

The first of these units is now being operated by Queen City Trailways, which also operated the full-scale deck-and-half offered by the Beck firm several years back.

The new addition to the Beck line is designed with the "Airglide" air suspension ride, and is powered with a Cummins diesel engine.

Design features also include an independent Tropic-Aire Carrier air conditioning unit which is operated by a separate diesel engine to insure top heating and air conditioning.

Perhaps the most startling innovation in the vehicle is in the interior. Interior paneling will be two-tone and made up entirely of aluminum. A new material, Marvibond, which joins aluminum with a hard-wearing fabric finish and which needs no painting will be used. This is expected to reduce maintenance costs considerably. (Marvibond is a product of the Clad-Rex Steel Co.)

This material along with the new National Seating Co. units that will be standard on these vehicles is expected to provide the operator with an attractive but completely practical interior.

Overall length of the semi deck-and-half is 35 ft, while overall width is 96 in. Height is 127 in. Wheelbase is 228 in.; ground to first step is 14 in., and headroom is 76 in.

For further information on the new coach write *C. D. Beck & Co., Inc., N. Main Ave. and Russell Rd., Sidney, Ohio.*

More What's New on page 96

Workmen's Compensation		
	Manual Premium	$12,500
	Experience Premium 20 Per Cent Credit	10,000
	Minimum Possible Experience Premium	5,000
General Liability and Auto Liability		
	Experience Premium @200/500/200	$200,000
	Standard Premium @25/25/25	160,000
	Excess Limits Premium	40,000
	TOTAL PREMIUMS	**$210,000**

WITH NO PACKAGE PLAN premiums might look like this. Exceptionally favorable experience lowers WC greatly, but brings down premiums slowly.

Can You Save on Premiums

Retrospective insurance is appealing to more and more bus operators who see in it a chance to reduce insurance costs while keeping sufficiently covered. The author tells how and where package plans can supplement experience rating.

By Dwight M. McCracken • *Assistant Vice President and Manager Motor Transport Department, Liberty Mutual Insurance Co.*

BECAUSE OF THE LARGE NUMBER of people they carry day in and day out, bus operators are probably more aware of insurance responsibilities than executives in most other businesses. It becomes second nature to assume the obligation of sufficient insurance, for to be without it would mean financial ruin in some cases.

But while bus men are well acquainted with the need for insurance, some may not realize that there are ways and means to reduce their present insurance costs without affecting coverage, or to get more coverage from the same insurance outlay.

It's generally known that insurance is, after all, little more than a pool in which the insured share each other's risks.

The amount that each contributes to the pool is determined by an insurance process known as "rating." In rating, the attempt is made to predict loss expectancy through a study of the loss experience of the past. Reduced to simplest terms, the losses incurred for various types of operation per unit of exposure determine the rate to be charged per unit of exposure for the same type of operation in the future.

Commercial bus fleet rates are based upon loss expectancy per bus or per mile or per $100 of revenue. The most common basis is the revenue basis because it is more sensitive to changes in business volume and the cost of doing business, which in turn reflects variation in the amount of exposure to accidents and the costs of the accidents.

Experience Rating • Where rates are based on the experience in all fleets combined, it is only natural that some of the fleets will have consistently contributed less than their pro-rata share of the losses based on their exposure, and others will have contributed more to the losses. Therefore, the insurance companies have developed experience rating to distribute the overall cost more equitably for each fleet according to the degree to which it contributes to the total losses of its industry.

This country's heritage of reward for individual effort is nowhere more apparent than in the opportunities for an individual bus company to reduce insurance costs through prevention.

In the first place, the losses of a single company are compared with the average losses of all bus companies engaged in similar operation, and if they are less per unit of exposure, that particular company gets a credit off the average or "Manual" rate. Worse-than-average losses result in an experience "charge."

To provide a quicker reward for loss prevention effort of policyholders which will reduce their insurance costs for the same year in which losses are reduced, the retrospective rating plan was developed. Under this plan the assured pays the experience-modified rate through the policy year, but after the year is over long enough to validate the losses, if his incurred losses are less than those expected by the policy rate, the retrospective formula will develop a premium lower than that which he has paid and the difference will be returned to him. If worse, he may be billed for an additional premium. In order that one big loss will not place too heavy a penalty on the assured, a limit is placed on the amount of any one loss that can go into the computation of the retrospective adjustment. Such plans usually have an upswing as well as a downswing from the policy premium with maximum as well as minimum limits above or

WC on Fixed Price Basis Liability on Retro Basis		WC Combined with Liability on Retroactive Basis	
Liability Standard Premium	$160,000	WC & Liability Standard Premium	$170,000
Basic .225	36,000	Basic .223	37,910
Limited Losses	90,000	Limited Losses	91,000
Loss Conversion Factor	1.30	Loss Conversion Factor	1.30
Converted Losses	117,000	Converted Losses	118,300
Basic and Conv. Losses	153,000	Basic and Conv. Losses	156,210
Tax Adj. 1.031	157,743	Tax Adj. 1.031	161,053
Excess Premium	40,000	Excess Premium	40,000
Total Liability Premium	197,743	Total	201,053
WC Fixed Premium	$ 10,000		$207,743
			201,053
Grand Total	$207,743	Saving:	$ 6,690

COMPARE TWO PLANS above and notice saving under combined plan, assuming WC losses of $1,000 and liability limited losses of $90,000. By combining WC with liability under retrospective plan, operators could secure immediate WC reduction.

by Buying Packaged Plans?

below which the premium cannot go. However, the downswing is usually greater than the upswing. (60-125 or 50-140 or 40-150)

Retrospective insurance is frequently referred to as "actual cost" insurance. That is, the assured pays ultimately only the actual cost of his "normal losses" plus the insurance company's charge for its service. By "normal losses" is meant only those losses which amount to less than $10,000 per accident, or whatever loss limit per accident is set in the plan. The assured is not required to pay the actual loss above that amount per accident. There is a fixed amount known as "excess limits" premium charged for this insurance protection against "catastrophe" losses.

The adjusted premium for normal losses is based on: (1) Fixed costs (the same regardless of the number and amount of losses). (2) Variable costs which vary with the amount of losses to be adjusted.

Fixed charges of the insurance company are generally collected in what is termed the "basic premium." This is expressed as a percentage of the total standard or adjustable premium. This basic factor varies ordinarily between 20 per cent and 30 per cent. This basic premium goes to pay for such activities as underwriting, rating, policy issuance, selling expense, loss prevention services, general administrative expenses, and insurance charges for limiting the maximum premium and the loss on a single accident. These expenses and insurance charges, as you can see, are independent of the number of accidents to be handled.

With regard to the insurance protection afforded by the maximum, if the aggregate losses develop an earned premium greater than the agreed maximum above the standard or paid premium, then the collectable earned premium is limited to the predetermined maximum. This insurance charge in the basic factor increases as the maximum factor is brought closer to the standard or paid premium level, but decreases as the size of premium increases.

There are two variable costs determining the charges of the insurance company in computing the earned premium:

1. The aggregate amount of normal losses (limited per accident).
2. The loss conversion factor which is charged as a per cent of losses to cover primarily the expenses of adjusting losses This charge naturally will vary with the aggregate amount of the losses.

Taxes collected by the various states vary from state to state. Therefore the tax factor is applied to the sum of the fixed and variable charges. After this sum is multiplied by the tax factor, the result is the earned premium.

Let us consider the major liability coverages needed by the average bus company and how they might be combined in a package plan to gain the full advantages of retrospective rating.

Workmen's compensation is required by law for injuries to employees arising out of and in the course of their employment.

Automobile liability coverage is required by law for injuries to persons other than employees or damage to property of others as the result of a vehicle accident.

For complete protection it is necessary to fill in the gap between these two coverages with general liability insurance for injuries to persons other than employees and not involving vehicle operation, or damage to property not owned by or in the care, custody, and control of the bus company and not involving vehicles. Such a policy should include protection for accidents arising out of the ownership, maintenance, and use of the terminal, ticket offices and storage garage and also liability of others assumed by the insured under contracts such as lease of premises or equipment and similar contracts.

Package Plan • Although it is possible for a company to elect a combined retrospective plan when their total annual standard premium exceeds $5,000 a year, we do not feel it advisable to do so unless a combined premium exceeds $25,000 because of the possibility of one accident having too much effect on the premium. However, for the larger risks, retrospective rating permits the

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Industry In Review

Bus Lanes Give Nashville "Rapid" Transit

• History was made last month in Nashville, Tenn.

With the complete cooperation of the city of Nashville, the Nashville Transit Co. began operating buses on lanes reserved exclusively for them. The results were more than were hoped for.

According to observers, buses never moved so rapidly through the center of town. They were, for the first time in a long time, doing the job they were designed to do—moving people rapidly.

Long advocated by the transit industry, reserved lanes got approval from Nashville several months back. And on the basis of their performance, could well become a familiar sight.

In Nashville, exclusive lanes were given over to buses from seven a.m. to nine a.m., and again in the evening from four to six p.m. Three long sections on major one-way streets were given over to the trial, which will last for several months.

The right hand lane on each of the three streets was marked off by overhead neon signs that warned motorists to stay off, although the company expects to further mark off the lanes by painting a yellow stripe.

Automobiles are not excluded completely at any time. During rush hours, motorists making the next right turn may use the lanes, while during non-rush hours all cars are allowed to use them. At no time is parking allowed in any of the exclusive lanes.

While the experiment was acclaimed widely in other cities, at least one major transit operator sent an engineer-observer to Nashville to look the situation over.

Evan E. Olmstead, traffic engineer for the Chicago Transit Authority, accompanied by William Marston, deputy traffic engineer for the city of Chicago, witnessed the inauguration of the reserved lane plan in Nashville.

According to Virgil E. Gunlock, chairman of the Chicago Transit Board, "We're interested in observing the operation of the Nashville plan because preparations are underway in Chicago to try out the exclusive bus lane plan in Chicago's Loop, probably on Washington St. from Franklin St. to State St. or to Michigan Ave."

Exclusive lanes were suggested for the Loop about a year ago.

Perhaps the greatest single spur to the idea of reserved lanes was the cooperation of the city. While other cities have hesitated to give direct aid in this way, Nashville even stationed traffic officers and motorcycle police along the reserved routes to insure freedom of movement. "Tow-away" signs were also installed.

The End of a 90-Year Run

Streetcars are shown lining up here for one last trip before buses replaced them at Atlantic City, N. J. The final trolley ride, enjoyed by scores of resort residents, marked the end of surface streetcar transportation in New Jersey. The trip also ended 90 years of trolley transportation in Atlantic City. Riders paid $2 a seat for the final trip with the proceeds going to charity.

New Firm for Portland

• The confusion that reigns supreme during franchise negotiations was never more apparent than it was last month at Portland, Ore., where last minute talks were conducted before the 20-year franchise of the Portland Traction Co. was to expire.

While the company sought a ten-year extension, the city countered with a proposal for a six-month extension, during which time it would rewrite the existing franchise. The city, in the person of utilities commissioner Nathan A. Boody, had already stated that it was less than pleased with the franchise and less pleased that the company was not locally owned.

As a result of all this, incorporation papers have been prepared for a new company, Rose City Transit Co., which seems likely to replace PTC as the city's mass transit operator.

Listed among the new firm's directors are C. C. Bowen, executive vice president of PTC, and several other PTC officers. Capitalization of Rose City Transit was set at $100,000 with which it will acquire transportation equipment and set up operations. PTC would transfer ownership of its city lines in return for Rose City stock.

Previously, franchise talks were clouded when the city turned up its "trump card." To get PTC to agree to a six-month extension, it was pointed out that PTC's lucrative interurban freight and passenger business might also find itself without a franchise.

Cleveland Writer Tosses Bouquet for Good Service

• Transit men are in the public eye. The nature of their business demands it. And like politicians, they're open wider to criticism because they work closely with the public.

Add to this a number of "arm-chair generals" and you find more brickbats than bouquets being thrown in the direction of a transit man.

Cleveland Transit and Don Hyde are no exception. Hyde has long been recognized in the field as one of the industry's top leaders, but in his own back yard he's pictured at far less than perfect by the local press.

But now like a fresh breeze off Lake Erie comes a column written by Sidney Andorn of the Cleveland News. It follows:

"Bite your tongue the next time you're ready to say something nasty about CTS.

"Look at the figures and you'll see this town has one of the few public transit winners in the nation.

"CTS has for too long been a whipping-boy. You can't get a seat on a bus so immediately the system stinks.

"You have to wait longer than you think you should for the vehicle that takes you home so right away the whole shebang is rotten.

"Reporters knock themselves out trying to prove how badly CTS is losing riders.

"Columnists like this one holler for free parking lots to save the Rapid.

"Well, the Rapid Transit doesn't need saving. It's doing well now, will pick up as it grows older in service.

"The entire Cleveland Transit system is doing well, better than ever in its history.

"We here have the only transit system in the nation which increased its mileage in 1955.

"Cleveland Transit's mileage went up one per cent this year, every other public system either stood pat or pared its service back.

"Increased mileage can only come from one place.

"Profits."

"$80,000,000 Ain't Hay"

"The year-end figures will show CTS in the black by $100,000.

"This isn't all the money the system made. Much of the profit went into increased service.

"Same boost happened here in 1954, the year New York's transit system lost $109,034,434.

"When Cleveland bought the local transit system from Cleveland Rail-

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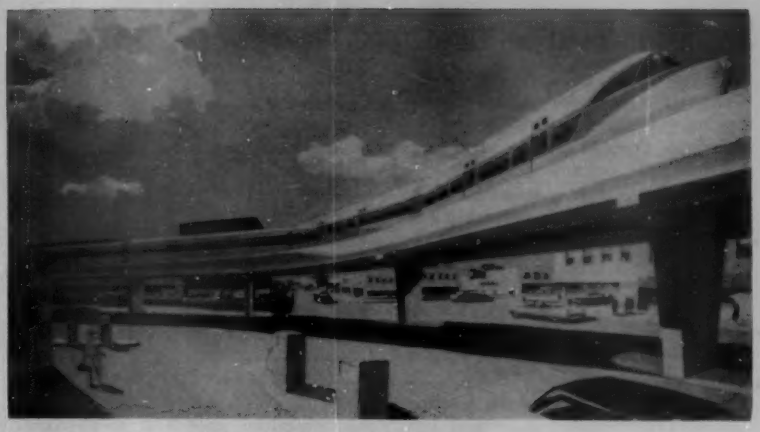


Speedy trains may be in the works as . . .

Bay Area Offered $1.5 Billion Cure-all

• The San Francisco Bay Area Rapid Transit Commission has unveiled its huge $1.5 billion proposal designed to revamp the transportation system and relieve throttling auto congestion in nine bay area counties.

The plan is based on an engineering study which the New York firm of Parsons, Brinckerhoff, Hall and Macdonald has been working on for the last two years.

To solve the transportation ills of the 7,452 sq. mi. bay area, a system of fast, electrically-operated, lightweight trains is recommended. The trains would be controlled by an automatic electronic dispatching system. They would attain top speeds of 70 mph and average speeds of 45 mph, including station stops.

Trunk of the system would be an underwater tube running from San Francisco to Oakland. The overall network would combine subway, elevated and surface operations, requiring construction of 390 mi. of double track facilities.

Stanford Research Institute is completing a study of financial and organizational aspects of the program, and expects to release its report about March 1. It will cover methods of financing total cost of the transit plan and the type and scope of administrative authority required for creation and operation of the system.

Stage construction is proposed in order to develop facilities to match transportation requirements. Plans for the system were based on detailed population, economic and land use studies as related to future growth in the area. The survey indicated that the present population of 3,000,000 may more than double itself by 1950, and by 1970 the number of persons living in the bay area may approach 4,500,000.

For first phase construction, the engineers outlined both an "optimum" and a "minimum" plan. While the plans are generally the same, they differ in proposals for the trans-bay link and for downtown San Francisco and Oakland lines.

Capital cost of first stage construction under the minimum plan is estimated at $586 million; cost of the optimum plan is set at $716.5 million.

Here is the proposed first phase construction program:

1. San Francisco and Oakland would be linked by fast train service operating either through a new trans-bay tube (under optimum plan), or on existing Key System rails on the Bay Bridge (under minimum plan). Train time by tube would be 11 minutes; by bridge, 22 minutes.

2. From San Francisco, two main lines would be built, one ending at South Palo Alto, the other heading north across the Golden Gate Bridge with a terminal north of San Rafael. The reports find it feasible to construct tracks on the Golden Gate Bridge, below the motor vehicle deck.

3. From Oakland, routes would run north and south along the eastern bay shore with terminals at Richmond and Decoto, and northeast with a terminal at Concord.

4. Parking lots with easy access would be built next to all suburban terminals.

5. All lines would be grade separated or on protected private rights-of-way. Densely populated areas will for subways or elevateds.

Survey Warns of Increased Car Space

• Provision of additional off-street parking facilities for persons employed in the city's downtown area would further complicate rather than solve the city's traffic problems. This was indicated by a bus ridership survey conducted in Richmond, Va., by Mayor Bryan's Back-to-Transit Committee.

Covering some 16,096 employees of 36 business operations in Richmond, the survey found that among persons employed where "there is obviously more available parking space, such as provided for state and city employees, 77 per cent traveled to work by automobile and only 16 per cent by bus.

In commenting on the large percentage of automobile users in areas where parking is more plentiful, the committee said:

"It would seem reasonable to infer that, if like parking availability existed in the already congested downtown area, all bus riding would decrease to that level (16 per cent).

"Such a decrease in public transit would not only eliminate it but would cause streets to become so saturated with autos that it would not only tend to promote further decentralization, but would have a profound disastrous effect upon the downtown area.

The committee asserted that ". . . the demand for downtown parking cannot be satisfied physically or economically. To preserve downtown Richmond, it is apparent that the movement of people in and out of this area cannot be accomplished in automobiles, that free movement must be accomplished by some other method—walking or unimpeded rapid transit."

Noting that 61 per cent of those who rode buses were regular patrons, the committee said: "It is apparent that an effort to convert the 39 per cent from irregular riders to regular riders would be beneficial."

Of those polled, about 50 per cent used transit. Autos had the rest.

The Richmond committee was created last fall to attempt to encourage greater use of transit facilities. Figures made public by the Virginia Transit Co. indicated that the campaign had slowed down, but failed to halt, a continuing decline in bus patronage.

For the first nine months of 1955 compared with the same period in 1954, ridership was off 8.3 per cent. In the final three months, while the back-to-transit drive was under way, the decrease was only 5.99 per cent.

Looking Back: Old No. 2 Sloshes Through

Another foot and a familiar bus operator would have been out of business. As it was, the second bus owned by Frank Martz got through and today the Frank Martz Coach Co. is one of the best known in the East. Conditions such as these plagued bus operators when the industry was in its infancy. While floods are still with us, at least now the bus can take another road. Back then, there weren't too many roads either.

Delaware Sets up Bus Code

• Specifications have been adopted by the Delaware Public Service Commission which are expected to aid school bus operators who face loss of charter trips into adjoining states that have different bus specifications.

Until now many school bus operators would have to pay fees and inspection expenses before they could cross state lines on charter trips. In addition, differing specifications made it doubtful that they could continue to get approval for these trips.

The new set of specifications will not require Delaware bus owners to make changes in their vehicles, according to the PSC. Other states have agreed to accept buses approved under the new rules.

Delaware buses have seats 39 in. wide to seat three children, and as a result have only 12 in. of aisle space. Several surrounding states require 14 in. of aisle space.

Also, Delaware school buses call for only six feet inside height, while other states require 76 inches. Under the new specifications, Delaware school buses will have 76 inches of headroom if standees are to be carried, will continue to require only six feet if all are to be seated.

Mack Names European Agent

• The formation of Mack Belgium, S.A., to manufacture, assemble and distribute Mack trucks, buses, trolley buses and diesel engines throughout Europe was announced recently.

The announcement was made jointly by P. O. Peterson, president of Mack, who at the time was on a European tour, and Baron Edouard Empain, president of Electro Rail, S.A., of Belgium.

Green Line Changes Name

• Since rail cars there are a thing of the past, the name of the Cincinnati, Newport and Covington Railway Co. underwent an official change at a recent meeting of stockholders.

Dropped from the name will be the word "Railway." The word "Transportation" will take its place. Use of "Green Line" will be continued.

Work Begun on 'Hound Center

• October 1st has been set as the date for completion of the new million Greyhound terminal at Jacksonville, Fla. The new building was given the green light last month and work was begun immediately.

Industry Briefs

To call attention to its 100 new buses and generally "sell" transit, the Seattle Transit System last month placed a free bus in regular service.

Operating for 12 hours daily on a different route each day, the bus carried a sign that read "This one is on us" on its fare box.

Although free rides cost less than $500, promotion which included gifts, publicity and advertising ran to nearly $9,000.

Ashtabula's Division of Transportation started the new year with a clean slate. The bus system was put into the black by transferring $2,700 from the general fund to the division.

Earlier the division was paid $8,000 to purchase new buses. But that amount must be paid back to the general fund.

Taken to task by the local press for declining to release rider counts, Cleveland Transit's GM Don Hyde said such figures would be given out if the transit board says it's okay.

At the same time, Hyde recommended that if these figures are released, a letter of interpretation should accompany them.

Such counts, Hyde maintains, are not official figures and are designed to serve another purpose rather than give an accurate picture of CTS operations.

Gas instead of cash was asked for by Daniel W. Capozzi, operator of Monroe City Lines in Michigan. Capozzi asked the City Commission to subsidize his operation to the tune of 2,000 gallons of gasoline and 40 gallons of oil monthly.

"Bowserama," the million trade exhibit of Bowser, Inc., made a big splash last month as it hit New York. The "road show" has already traveled more than 50,000 miles . . . gives Bowser a chance to show off its many wares.

General Motor's perennial faith in the future has bloomed again. GM's confidence in continued national prosperity will be backed up with $1 billion in capital expenditures, President Harlow H. Curtice announced last month.

Curtice predicted another record year for 1956, with full employment and a new high in gross national product.

Public Service Coordinated Transport, New Jersey's big bus operator, made the news last month when it announced it was discontinuing one of its park-ride lots.

The company operates two lots on the Newark outskirts, found that one was getting most of the patronage.

Toledo Renews Curb Parking Ban

• A 30-day ban on all downtown parking has been renewed by the Toledo City Council for another 30 days, while a Publicity and Efficiency Commission makes a study to determine what effect the ban has on downtown business in general.

While a number of small downtown merchants seek return of curb parking and even threaten legal action, Vice Mayor Skeldon said that the ban has made it possible for buses to move on schedule for the first time. He pointed out that three out of every five downtown shoppers ride buses of the Community Traction Co. That, he said, was one of the original objectives.

Larger merchants also sought a modification of the ban, but through the Downtown Toledo Association are on record as favoring any plan to expedite traffic.

Relief Not Enough, They Do Without

• A special Massachusetts state legislative recess study commission has declared in a preliminary report that special tax relief for local transit companies is not the answer to their financial troubles.

The commission said that exemption from fuel and payment of excise taxes on operating equipment might help for a while, but would "shortly be overcome by the rise in costs related to maintenance and operation."

It declared that increasing passenger car use, and that costs of wages, maintenance, equipment and fuel may be expected to increase.

The commission quoted a New York report to the effect that good management is the only hope of a transportation company and that government subsidy is not enough.

Santa Makes an Express Run

Travelers on the New Jersey Turnpike were surprised Christmas Eve seeing Santa Claus himself driving the express Philadelphia to New York City run for Quaker City Bus Co. Actually, it was driver George Hettrick, who took it upon himself to decorate his bus and dress the part of Santa. Hettrick probably told the small fry that his sleigh was being given a maintenance check for the evening run.

Interstate Fee Waived in St. Louis

• Illinois bus operators operating into Missouri will not have to pay a Public Service fee of $25 for each bus if the operation extends only into the commercial zone of St. Louis, it was pointed out by the Illinois Bus Association last month.

The commercial zone includes an area of 19 miles around the corporate limits of the city of St. Louis.

Meanwhile, the association said, the Missouri Public Service Commission has offered to negotiate with Illinois' commission for full reciprocity for buses operating in Missouri. Illinois makes no charge for Missouri buses operating interstate into Illinois.

Harrisburg Continues Christmas Spirit

• Harrisburg Railways Co. carried the Christmas spirit one step further this year. For the large Eastern Orthodox Church population in the Steelton area of the city, HRC operated a special Christmas bus.

Dressed up in a special Christmas package the bus bore the phrases Chestit Bozik (Macedonian and Bulgarian for Happy Christmas) and Hristos Se Rodi (Serbian for Christ is Born).

The vehicle was operated during the first week of January, the Christmas period for the Eastern Orthodox Church.

Leveling Off Seen by New York TA

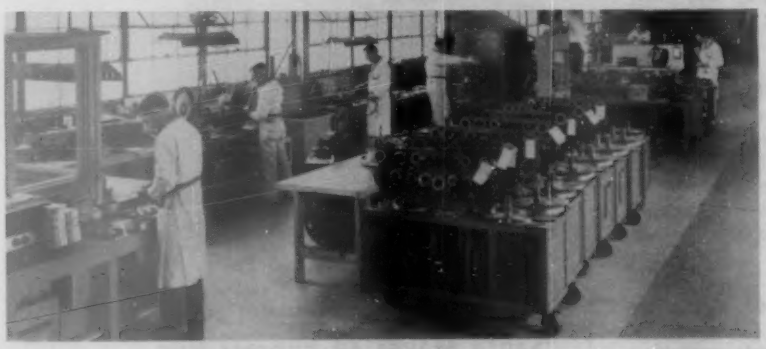
• New York City's Transit Authority, although deeper in the red than it was when it took over six months ago, has hopes for the future. The actual decline was less than expected, and it is expected by TA members that passenger revenue will level off.

A 3.08 per cent decline in revenue had been forecast. The six-month figure was 2.57 per cent.

TA Chairman Charles L. Patterson announced that the agency has approved a contract for 318 new buses to replace outworn equipment.

Low bidder for the bus contract was the Mack Motor Truck Co., which bid around $6½ million. This contract is still subject to approval of the city's Board of Estimate. The buses will seat 47 instead of 51 passengers, but will allow better loading and unloading and will have more standing room.

Among the first buses to arrive, once the deal is approved, will be two air conditioned units which will be tried out. If satisfactory, other such buses will be ordered.



Trans-Main Broadens Service

Complete transmission reconditioning service has been promised bus operators by the R. D. Fageol Co.'s Trans-Main Division now that the firm has expanded such services to include manual-shift as well as torque converter units. In some cases, replacement units can be furnished for operators' use while reconditioning is in process, it was pointed out by H. W. Fagert, president. The scene above shows one of the reconditioning aisles at the Trans-Main Division plant at Kent, Ohio.

Calendar of Events

A list of activities of interest to the bus industry.

February

16 Illinois Bus Assn., 31st annual meeting, Congress Hotel, Chicago, Ill.

March

6-8 American Transit Assn. Region 3, Hotel Pfister, Milwaukee, Wisc.

10-11 Motor Bus Society, annual convention, Hotel DuPont, Wilmington, Del.

15 New England Transit Club, Hotel Statler, Boston, Mass.

20-21 New England Bus Assn. annual meeting, Hotel Kenmore, Boston, Mass.

April

11-12 American Transit Assn. Region 5, Hotel Lassen, Wichita, Kansas.

16-18 American Transit Assn. Region 7, Palace Hotel, San Francisco, Calif.

May

1 New England Transit Club, Hotel Statler, Boston, Mass.

2-4 American Transit Assn. Region 2, Lord Baltimore Hotel, Baltimore, Md.

8-10 National Highway Users Conference, 6th Highway Transportation Congress, Washington, D. C.

June

27-30 New York State Motorbus Assn., annual summer meeting (four-day cruise).

Pennsy Gets GM Train

• General Motors' Aerotrain has settled down to the business of proving its worth. After trial runs and special appearances, one of the two trains was put into operation by the Pennsylvania Railroad. The second will run between Chicago and Detroit for the New York Central Railroad, starting in May.

According to figures announced after a recent trial run, costs for fuel were just about one-fourth the costs of operating a conventional train. The answer? The extreme lightweight construction of the Aerotrain.

At the present time, the Pennsy's unit is being run experimentally, traveling the New York City-Pittsburgh route in regular service.

The Fare Box

• The following are some of the increases asked for and granted around the country. This list cannot be considered complete, but merely serves to indicate current fare trends and levels.

Increases Asked

Consolidated Bus Lines, N. J. • Seeks permission from Public Utilities Commission to boost zone fares by two cents in each zone—from ten to 12 cents, from 20 to 22, and from 30 to 32 cents. Also seeks basic increase of two cents on other lines.

Tucson Rapid Transit Co., Ariz. • Asks for rezoning of its first zone into two zones and increases in fares of five cents or more per zone.

If granted, the hike would be the firm's first in more than five years.

South Boulevard Bus Owners Assn., N. J. • Wants a boost in fares to pay for recent pay increases for employees. Present fare is ten cents for one zone and 15 cents for two-zone ride between Journal Square and Bayonne.

City Transit Co., Ohio • City Commission has already agreed to a new fare of 15 cents and two tokens for a quarter. But, it insists on franchise tax increase from one to five per cent. The company refuses to pay more than one per cent.

Municipal Transit Lines, Miss. • Has asked voters to approve amendment allowing ten-cent adult fare within the city. School children would continue to pay five cents when riding before five p.m.

Badger Bus Lines, Wisc. • Has asked the Public Service Commission for permission to raise current bus fares by 13 per cent. Decreasing patronage was blamed for the hike.

A public hearing was scheduled by the PSC for late last month.

St. Louis Public Service Co., Mo. • Seeks only adjustment in discount rates, and would leave basic transit rates unchanged.

Has asked Public Service Commission to increase cost of weekly permit from 75 cents to $1.00 . . . weekly express permit from $1.00 to $1.25. Student pass rate would also be upped by 25 cents—from $1.00 to $1.25.

Continued on page 94

Dallas Bus Conversion Completed

• Rails to rubber conversion of Dallas has been completed with 529 buses and trolley coaches taking on the task previously shared with Dallas Transit Co.'s trolley fleet.

The changeover was almost without incident. DTC had planned for the switch weeks in advance. Immediately, new route schedules and route maps were made available with distaff relatives of DTC employees handing them out at booths in the downtown section. New routings also appeared in a number of newspaper advertisements.

Meanwhile, DTC established 68 downtown bus stops for the 61 lines of the all-bus system, posting each with signs. To eliminate confusion, new stop signs were kept covered by brown paper until the actual date of the changeover, January 15.

At the same time the trolley left the Dallas scene, it was announced by DTC President W. R. Burns that a raffle would be held, the winner being entitled to one of the last streetcars. The hitch there was that the unit wouldn't be in condition to move. Stripped of its trucks, trolleys, seats and controllers, only the shell would be raffled. The winner would have to pay for transporting it elsewhere.

DTC also permitted adults to operate a trolley on the afternoon of the changeover, the last such ride for a number of patrons.

SE Greyhound's Poche, 54, Dies

• A. Judson Poche, 54, manager of maintenance for Southeastern Greyhound Lines, died Jan. 12 at Lexington, Ky.

Mr. Poche started his transportation career in August of 1924 when he joined the Teche Transfer Co. as a mechanic and bus driver. When the company extended its services to New Orleans in 1925 he was transferred in the same capacity and was later appointed shop foreman.

In October 1926, Mr. Poche was made assistant to the superintendent and subsequently became superintendent of maintenance of Teche Greyhound. In 1934 he was promoted to the position of general superintendent.

Under Mr. Poche's hand, Teche Greyhound Lines was awarded 15 consecutive BUS TRANSPORTATION Maintenance Efficiency Awards, an achievement no other company has yet accomplished.

Effective Oct. 1, 1954, Mr. Poche was appointed manager of maintenance for the consolidated Southeastern Greyhound Lines system.

Mr. Poche married the former May Levy of Franklin, La., in 1934 and is the father of two children, A. J. Poche, Jr., and May Poche.

In Icy Weather It's Back to Buses

Thousands of auto drivers who make themselves known in the summer months by demanding their share of the road left the job of driving to the professional last month as the East Coast got its first full taste of winter. With roads covered with ice, bus converts threw already loaded schedules askew by packing mass transit vehicles. The scene above shows a typical group alighting from buses at the New York City side of the George Washington Bridge and picking their way on ice-covered sidewalks.

Philly Group Offers 25-Year Transit Plan

• Public financing of far-reaching improvements of transit lines and railroad commuter service to attract riders away from private automobiles was included among recommendations in a report released by Philadelphia Mayor's Urban Traffic and Transportation Board.

Also recommended was the creation of a Regional Transportation Organization, representing the five southeastern Pennsylvania counties and the New Jersey counties of Camden, Gloucester and Burlington, to develop and control an integrated transportation system embracing highways, mass transit and parking.

It was proposed that highway money—gasoline taxes, vehicles licenses, parking fees and tolls—be used, if necessary, to subsidize public mass transit. Or, if public transportation prospers, money from fares could be used for highway and parking facilities, it was suggested.

Without making a specific recommendation on the point, the board indirectly suggested the possibility that the city of Philadelphia or the regional organization acquire the Philadelphia Transportation Co. and lease it to a private operator.

The board also dodged a direct recommendation on the ultimate fate of suburban bus and trolley lines and railroad commuter lines, but implied that these, too, must eventually fall under some form of public control.

It was proposed that the contemplated regional organization, which would require enabling legislation by two states and Congress, should be vested with powers to include planning, acquisition, construction, operation and supervision of facilities, the collection of revenues and the issuance of bonds.

The regional organization would aid in carrying out an estimated $1,600,000,000 program over a 25-year period, including highways, expressways and streets, improvements and extension of mass transit facilities, and new parking facilities for the five southeastern Pennsylvania counties. Additional spending, not yet estimated, would be needed to meet the needs of the New Jersey counties.

In emphasizing the importance of mass transit in solving the area's transportation problems, the board said:

"Peak-hour highway facilities per person cost several times as much as peak-hour public transit facilities. Public assistance to improve highways must be accompanied by equivalent action to improve public transit.

"The driver of the private car who insists on taking it to work every day in the central city must pay a price for this convenience that is high enough to help support the public transit facilities available to him, help maintain the roadways he uses, or—most important of all—persuade him to consider public transit as an alternative."

City Tries Hand at Buses

• The City Council of Oxnard, Cal., has authorized the establishment of an "experimental" city-operated bus system to go into operation as soon as possible.

Recommended were fares of 15 cents for adults and ten cents for children and students . . . operation of four buses on half-hour schedules. Buses would have a capacity of 12 to 15 persons, except for one that would seat 21 people.

The service would be financed by an inter-fund loan of $50,000 to be paid back with revenues and an authorized increased tax rate.

Citizens approved a municipal bus service at a special election in December. Oxnard has been without service since March, 1955 when Harbor Transit Co. ended its service.

New Jersey Association Holds 20th Holiday Party

From the picture above it would seem that half the population of the small state of New Jersey attended the recent holiday party of the New Jersey Motor Bus Association. Held at the Robert Treat Hotel in Newark, the get-together did bring out a large number of bus operators. All in all, more than 400 operators and their guests took part in the festivities. That's more than the party ever brought out before. Actually, even with its small size, New Jersey boasts more bus companies than any other state.

Insurance Hearing Set

• Scheduled for a public hearing before the New York PSC early this month was a proposal to increase minimum requirements for libality insurance carried by bus operators. The PSC staff had suggested new minimums for bus lines operating within or into New York City of $10,000 for property damage and $100,000 to $300,000 for personal injury.

Orders Louisville Fare Up

• Ruling that fare increases put into effect by the Louisville Transit Co. early in September were too low, Franklin County Circuit Court handed down a late-December decision which:

1—Set aside an order by the State Motor Transportation Department granting the September fare increases that were only half what the company had asked. The court found that the present fares were not just and reasonable and almost amount to confiscation of property.

2—Ordered the department to re-hear Louisville Transit's application for higher fares. Stating that the department erred in finding that the company will make $241,443 a year under the present rates, the court estimated the return would be only $188,790.

3—Ordered the department to allow the company higher interim fares while new final rates are being calculated. The court specified that the interim fares give the company an annual return of at least $330,000.

Bus fares in Louisville went up from 15 to 20 cents Jan. 1 as a result of the interim increases authorized for the company.

The city announced, however, it would ask the State Court of Appeals to overrule the increase.

Vandals Endanger Low Fare

• Low fares for school-bound youngsters may become a thing of the past in Omaha, Nebr., where vandals have continued to wreck buses of the Omaha Transit Co. Last year more than $8,000 in damage was done to OTC buses, most of it to buses used to transport pupils to high school football games.

The situation came to a head last month when one bus driver who became "fed up" with vandalism turned his bus around and headed for the nearest police station. En route, a number of the youths leaped from the bus through an emergency door.

Company President L. G. Barnes said that one more instance of destruction on the part of pupils will lead to an application to the City Council to discontinue student fares.

Montreal Places Bus Orders

• The biggest bus order in the history of the Montreal Transportation Commission was placed last month with three major manufacturers. Scheduled for delivery by Aug. 15 were 250 buses to be purchased from Canadian Car & Foundry, Mack Truck and General Motors.

The new buses will be used to replace trolley cars on a number of routes . . . will bring to 1,250 the number of buses and trolleys MTC has in service.

The purchase, part of an $11-million MTC modernization plan for 1956, includes orders for 125 Canadian Car & Foundry units, 50 Mack and 25 GM's.

Reduced Rates Continued

• Reduced round-trip furlough rates for members of the armed forces have been extended to Jan. 31, 1957, by 700 of the nation's intercity bus lines, according to an announcement by the National Bus Traffic Association.

The lower fares for men traveling in uniform are also exempt from the federal transportation tax.

Cleveland Subway Recommended

• A downtown subway in Cleveland, to cost an estimated $33,000,000 has been recommended to Cuyhoga County Commissioners by the engineering consultants, Praeger-DeLeuw-Cutting, which began feasibility studies last June. The report urged that the subway be built, and said it could be constructed within the limit of a $35-million bond issue approved by voters in 1953.

It would be a loop route extending from the Union Terminal under Public Square, east on Superior Ave., N.E. to E. 13th St., south under E. 13th St. to Huron Rd., S.E., and west under Huron to the Terminal. Running time in the subway would be about seven minutes.

The consultants' "principal and basic justification" for the subway was founded on the "recommendation and assumption" that surface bus lines competing with the rapid would be eliminated, and their riders shifted to the rapid transit system.

Some 700 bus runs would be eliminated daily under this proposal. Though a major hope for the subway had been that it would lessen downtown congestion and bring motorists to public transit, this conclusion was not encouraged.

VTC Plots Storm Routes

• While meteorologists ponder the course of future East Coast hurricanes, the Virginia Transit Co. is going under the assumption that the cities in which it operates are in for more of the big blows. As a result, VTC has mapped a rerouting system to be used in the event that streets on which it operates are flooded.

The tidewater cities of Norfolk and Portsmouth are doubly threatened during storms. First, there is the accompanying rain of hurricanes. Secondly, abnormal high tides result in the flooding of many streets.

PSC Nixes Organization Plans

• Six plans previously proposed to reorganize New York's bankrupt Third Avenue Transit Corp. have been rejected by the Public Service Commission, which then introduced a plan of its own.

Terming the six plans "not in the public interest," the PSC suggested a program calling for the issuance of $8½ million in first mortgage bonds and common stock of $2¼ million, the latter figure based on the company's net worth as of last July.

Under the PSC plan no dividends would be paid on the common stock until such time as first mortgage bonds were reduced to $5 million. This would insure rapid amortization of the bonds, the PSC feels.

The PSC started weighing the six different plans last summer when the federal court submitted them to the PSC for "its approval." While the PSC turned thumbs down on the programs suggested, it was in agreement with all six plans that "speedy and sound reorganization . . . is in the public interest."

Distributor Is Named

• National Pneumatic Co., of Boston, Mass., has announced the appointment of the Illinois Auto Electric Co., 2001-37 Indiana Avenue, Chicago, as a distributor for parts for NP door control and safety equipment.

The new distributor will cover portions of Indiana, Illinois, Wisconsin and Iowa.

ABOUT PEOPLE . . .

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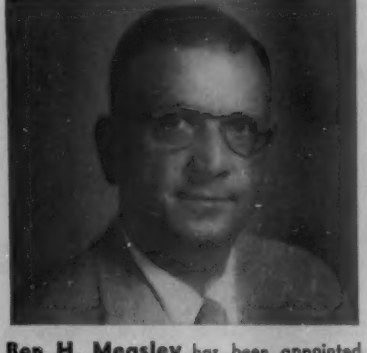

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Thomas W. Clift has been appointed general manager of Timken Roller Bearing Company's plant at St. Thomas, Ontario, Canada. He succeeds **John C. Trull.**

M. J. Taup has been appointed administrative assistant to the vice president of Vickers Inc. He formerly was manager, mobile products sales in Detroit and has been associated with the company since 1935.

A. M. Lane, midwest regional manager for the company has been named manager of mobile products sales. He has been with the firm since 1940.

Graeme Reid, who has been closely associated with the transit industry for nearly 30 years has resigned from Ford, Bacon & Davis, Inc. He is expected to resume his former private consulting practice, although no plans were announced.

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Herman W. Norton has been appointed as law enforcement director of the State Motor Transportation Dept., Ky.

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Sylvester J. Schrad has been named battery sales manager of the Omaha sales district of the Electric Auto-Lite Company.

1956—It should be a Pretty Good Year

Last month we asked: "What will 1956 bring?" We received so many replies that we're running them this month, too. Here's what top intercity men think.

Arthur Hill, Atlantic Greyhound: Present indications are that the intercity bus industry will finish 1955 about on a par with 1954. We expect 1956 to be better.

We must look forward to competing with an anticipated 54 million private automobiles which will continue to have a serious impact especially on short-haul routes and carriers. Some further increases in costs must also be anticipated.

The industry intends to attack these problems by increasing load factors in regular-route service, through careful reductions in schedules where unavoidable, and by use of larger vehicles. We made considerable progress along these lines in 1955.

Elaborate plans for increasing charter and tour business are in the making. The same is true for express and mail business. We hope to have 1,300 to 1,500 luxury deck-and-a half buses in service next year. More through-bus and express schedules will be possible as a result of arrangements for pro-rating state registration fees. Extensive improvements in terminal, rest-room and restaurant facilities are planned.

Claude A. Jessup, Trailways: In our opinion, in the year 1956 our intercity business up to 300 miles will be as good as the year 1955. We believe that we will show an increase in our charter, package and express, and mail revenues. The local business, in our opinion, will continue to decline. Our costs will be up slightly.

R. C. Hoffman, Jr., Carolina Trailways: My impression of business outlook for 1956 is good. I feel the general business boom will carry over at least better part of next year, therefore there should be considerable travel by our country's citizens. Only problem facing bus industry is increased cost of operation and new automobiles now on highways. These are in direct competition with public transportation by bus. I do not look for as good a year as we have had in 1955. My company intends to put all sales effort possible in securing new business and promoting sales and promoting all forms of public transportation.

L. H. Schultz, Blue Bus Lines: Line business of short haul bus lines will undoubtedly continue to fall off in '56 due to private car competition, necessitating more serious and effectively concentrated efforts for federal and state tax relief similar to the Wisconsin plan. Otherwise, many more and even larger communities will soon find themselves without intercity transportation of any kind. When this happens the President will probably appoint national and state committee to study the problem; why not urge the President to do it now?

L. P. Wakefield, Jefferson Transportation Co.: Decline in local passenger revenue appears to be levelling off. This together with operators' ability to balance operated miles with present revenues tends to make for an optimistic outlook for 1956. The dark cloud lies in the inability of manufacturers and suppliers to hold prices on equipment and supplies which has reached its limit in passing on higher costs to the public.

R. J. McDermott, Missouri Pacific Bus Lines: We do not anticipate any material change of conditions in bus industry year 1956. Like most all other bus companies, we require more passengers but with over 85 per cent of people using private automobiles and with new and used automobiles readily available we do not look for any large increase in bus travel under normal conditions. We are concentrating on increasing charter and express business.

BUS AND TROLLEY BUS DELIVERIES

Motor Bus Deliveries	Number of Buses	Manufacturers	Model and Type	Seat
American Buslines, Inc. (Neb.)	3	Flxible	228JT1-55-37IC-AC	37
Atlantic Greyhound Corp. (W.Va.)	1	GMC	PD-4501	45
Baltimore Transit Co. (Md.)	20	GMC	TDH-5105	51
Bortner Motor Coaches (Pa.)	1	Flxible	218B1-55-33IC	33
Broadview Bus Line Co. (Ohio)	1	GMC	TDH-5105	51
City Bus Co. (Okla.)	3	GMC	TDH-3714	37
Cleveland Transit System (Ohio)	6	GMC	TDH-5105	51
Continental Air Transport Co., Inc. (Ill.)	8	Flxible	218B1-55-29IC	29
Continental Bus System, Inc. (Tex.)	5	Flxible	228JT1-55-37IC-AC	37
Continental Central Lines (Kan.)	4	Flxible	228JT1-55-37IC-AC	37
Continental Southern Lines, Inc. (La.)	6	Flxible	228JT1-55-37IC-AC	37
Continental Western Lines, Inc. (Cal.)	3	Flxible	228JT1-55-37IC-AC	37
Dallas Transit Co. (Tex.)	20	Southern	S-50-DHC	49
Eastern Greyhound Lines (Ohio)	16	GMC	PD-4501	45
Kansas City Southern Transport Co., Inc. (Mo.)	2	Flxible	218B1-55-29IC-AC	29
Lake Shore Coach Lines, Inc. (Detroit)	1	GMC	TDH-5105	51
Milwaukee & Suburban Transport Corp. (Wis.)	25	GMC	TDH-5105	51
Northwest Greyhound Lines (Wash.)	4	GMC	PD-4501	45
Pacific Greyhound Lines (Calif.)	13	GMC	PD-4501	45
Philadelphia Transportation Co. (Pa.)	77	GMC	TDH-5106	51
Queen City Coach Co. (N.C.)	4	GMC	TDM-4515	45
Queens-Nassau Transit Lines, Inc. (N.Y.)	15	GMC	TDM-5106	51
Scarsdale Bus Corp. (N.Y.)	1	GMC	TDH-4512	45
Seattle Transit System (Wash.)	40	GMC	TDH-5105	51
Southwestern Greyhound Lines, Inc. (Tex.)	8	GMC	PD-4501	45
Transcontinental Bus System, Inc. (Tex.)	1	Flxible	228JT1-55-37IC-AC	37
Waukesha Transit Lines (Wis.)	2	GMC	TDH-5108	51
Miscellaneous Deliveries				
Custom Coach Corp. (Ohio)	1	Fitzjohn	Road-Runner	—
Fort Hays Kansas State College (Kan.)	1	Flxible	218B1-55-29IC-AC	29
Iowa State Teachers College (Ia.)	1	Flxible	218F1-55-29IC	29
North Dakota Farmers Union (N.D.)	1	Flxible	218GM1-55-29IC	29
N. Syracuse Central School Dist. (N.Y.)	3	GMC	TGH-3102	31
Pace School Bus Service (Mo.)	1	GMC	TGH-3102	31
Southern Sightseeing Co. (La.)	1	Flxible	218B6-55-33SS-AC	33
Yellow Cab Co. (Calif.)	2	Flxible	218B1-55-33SU	33
Foreign Deliveries				
Puerto Rico Motor Coach (P.R.)	1	Flxible	228JT1-55-41IC-AC	41

Total Deliveries reported in this issue . . . 302

Note: This list is based on monthly reports from manufacturers. Not all manufacturers report regularly, consequently this list is not to be considered complete.

With Grey-Rock you can SEE, FEEL and SAVE the difference!

SEE *the difference*

See the difference in the many friction materials Grey-Rock uses. For light trucks—Balanced Trucksets, in distinctive woven and molded combinations, or in all-woven or all-molded sets. For heavy jobs—Balanced Blocks in combinations of molded materials. All specially engineered for each make and model.

FEEL *the difference*

Feel the difference in faster, smoother brake action—minimum fade—quicker water recovery—quiet action—and good pedal feel that assures driver peace of mind. You get all the superior braking features you want and need with Grey-Rock.

SAVE *the difference*

You *save* because Grey-Rock Balanced Blocks and Balanced Trucksets give more miles between relines—longer drum life—better tire wear—less labor and downtime—all adding up to lower cost-per-mile. Get the facts from your Grey-Rock jobber.

Only **Grey-Rock** *makes*

BALANCED BRAKSET LININGS

BALANCED BRAKSETS • TRUCKSETS • BRAKE BLOCKS

VEE-LOK® CLUTCH FACINGS

GREY-ROCK DIVISION of Raybestos-Manhattan, Inc., Manheim, Pa.

RM

RAYBESTOS-MANHATTAN, INC., Brake Linings • Brake Blocks • Clutch Facings • Industrial Rubber, Engineered Plastic, and Sintered Metal Products • Rubber Covered Equipment • Asbestos Textiles • Laundry Pads and Covers • Packings • Abrasive and Diamond Wheels • Bowling Balls

SASH FOR EVERY TYPE OF TRANSPORTATION—ON LAND, ON THE SEAS, IN THE AIR

SEARCH FOR PERFECTION . . . GM engineering research and development are continually under way to produce better coaches for the transportation systems of America. All materials and component parts used are subjected to extensive, exhaustive tests to determine which will contribute to longer coach life, lower maintenance costs and greater passenger comfort. **Edwards Sash — the eyes of transportation — has been standard window equipment on GM Coaches for many years.**

EDWARDS SASH

All over America — wherever and whenever the wheels of transportation turn — you'll find the finest, most modern coaches Edwards Sash-equipped. Leading manufacturers standardize on it — profit-minded operators specify it.

Regardless of the type of bus or service — there's an Edwards Sash that meets exactly — and economically — every operating and service requirement. Write today for complete information.

- MAXIMUM VISIBILITY
- MINIMUM MAINTENANCE
- RATTLE-FREE, WEATHER-TIGHT FIT
- FINGER-TIP OPENING AND CLOSING
- STREAMLINED CONSTRUCTION

THE O. M. EDWARDS CO., INC., SYRACUSE 3, N.Y.
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St. Laurent, Montreal 9, P.Q.

The Eyes of Transportation

Read What They Say:

SUCCESSFUL FLEET OPERATORS ENDORSE PHILLIPS 66 HEAVY DUTY MOTOR OILS!

Construction company in Nebraska, operating 18 kinds of Caterpillar Diesel units and 40 Ford Trucks, using Phillips 66 Heavy Duty Motor Oils since 1941, reports: *No excessive oil consumption, carbon or sludge—No ring or valve trouble—Extremely clean engines at overhaul.*

Bus company in Oklahoma, operating over 140 city buses, reports: *Overhauls extended from 65,000 miles to better than 125,000 miles since changing to Phillips 66—No loss of power from sludge formation—Increased life for crankshafts and bearings—35 per cent less oil consumption—Considerably reduced engine deposits.*

Cab company in Illinois reports: *Cleaner engines since changing to Phillips 66—Less low-temperature sludge—Overhaul stretched out to between 85,000 and 125,000 miles—Lower maintenance costs—More efficient use of cabs.*

Cab company in Texas, operating 25 Ford radio cabs, using Phillips 66 Heavy Duty Motor Oils for nearly seven years, reports: *Top performance for at least 125,000 miles with no repairs, only tune-ups—No valve or bearing trouble since changing to Phillips 66.*

Cartage company in Missouri, operating 56 over-the-road tractor units and 55 city pick-ups, using Phillips 66 Heavy Duty Motor Oils for nearly five years, reports: *Wear, .003 to .005 per 100,000 miles—Sludge and varnish negligible—Bearings, no trouble—Fouling, none—Oil consumption, 128 miles per quart, with oil changes every 2,000 miles.*

Freight transportation company in Oklahoma, operating 80 Diesel tractors and 173 trailers, using Phillips 66 Heavy Duty Motor Oils since 1946, reports: *Remarkably clean engines at overhaul—Little sludge or wear.*

Test Phillips 66 Heavy Duty Motor Oils against the oil you are now using. A Phillips 66 Lubrication Engineer will be glad to help you set up a test. Write to: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Oil for the Engines of Commerce

Phillips 66

PHILLIPS 66 HEAVY DUTY MOTOR OILS

You can cut your FLEET MAINTENANCE COSTS with

AC COMMERCIAL SPARK PLUGS DESIGNED FOR MAXIMUM TRUCK MILES WITH MINIMUM PLUG COSTS...

AC ignition engineers, pioneers in the improvement of ignition to meet today's transportation needs, have developed AC Spark Plugs with a built-in system for preservation of proper heat range. This means high efficiency operation and minimum gap wear. The *right* AC Spark Plug, properly *set* for the truck's engine and work conditions, will keep your trucks rolling at full efficiency and at extremely low plug cost per mile.

AC Balanced Heat Construction Means Top Performance!

The two AC *exclusive* features explained below combine to give AC Commercial Spark Plugs a control that means *heat-held-where-it's-most-useful!* This balanced heat construction increases plug life, assures plug efficiency.

CONDUCTASEAL is the famous AC-originated fused metal and ceramic seal which conducts a sure spark and positively prevents gas leakage. Such leakage not only loses compression but results in a changed plug heat range—both results reduce engine power production.

HOT TIP is another famed AC exclusive development—a deeply recessed insulator tip which heats fast to burn away combustion residue before it can deposit to foul the plug. CONDUCTASEAL keeps the heat at the HOT TIP where it can do a first rate job of ignition and power production. Standardize on AC Commercial Spark Plugs.

with the exclusive HOT TIP

Watch WIDE WIDE WORLD and BIG TOWN • NBC-TV

GM GENERAL MOTORS

AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

SPECIFY MIDLAND POWER BRAKES AND ENJOY REAL PEACE OF MIND!

When you order new highway transport equipment, be sure to specify Midland Power Brakes — then you can be sure of getting the finest. Yes, you can rely on Midland Power Brakes—air or vacuum—to give you long, trouble-free, satisfying service — and at the lowest overall cost.

Specify Midland, too, when replacing or *modernizing* the power brakes on your present equipment. Every Midland Air or Vacuum Power Brake Kit is especially engineered for the truck, tractor, or trailer for which it was designed — to give you top performance and positive protection at all times.

Specify Midland Power Brakes and enjoy real peace of mind!

- **Every working part in Midland's Power Brake Systems is thoroughly engineered and carefully tested to insure maximum efficiency and customer satisfaction.**
- **Midland Power Brakes are easily and quickly installed, come in complete kits for installation either at your nearest Midland distributor or in your own shop.**
- **Midland Power Brakes stop any legal load—quickly, easily, safely. Midland brake systems are designed and built with tremendous *reserve* power.**
- **Midland Power Brake Kits or parts —as well as service—are readily available through a national network of distributors, as well as representatives in most foreign countries. There's one near you.**

THE MIDLAND STEEL PRODUCTS CO.

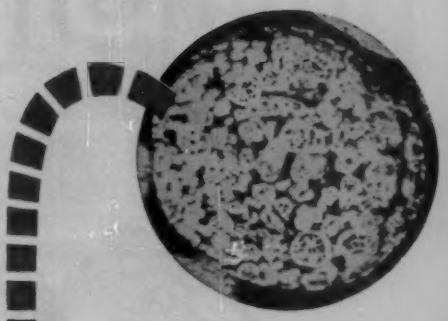
3641 E. Milwaukee Avenue • Detroit 11, Michigan

Export Department: 38 Pearl Street, New York, N.Y.

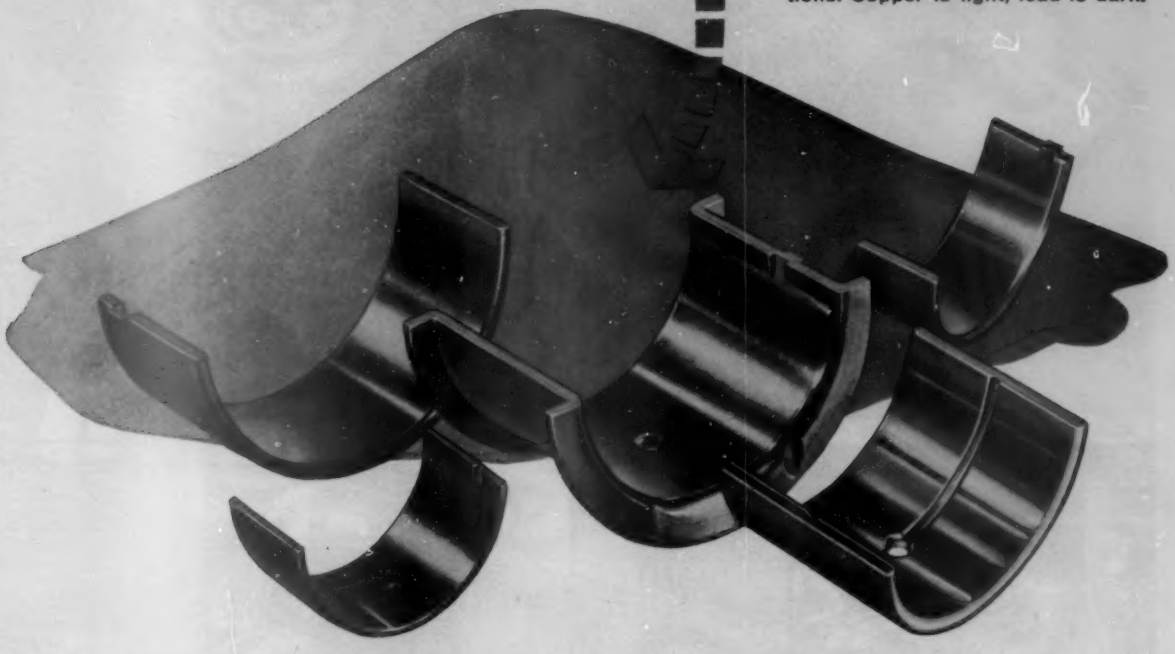
Those Who Know Power Brakes Choose

MIDLAND!

Take a look at the Powder that makes the better Fm Sintered Copper-Lead Bearing



Each tiny granule is an alloy of copper and lead, in controlled proportions. Copper is light; lead is dark.



That pile of metal powder is the starting point for maximum heavy-duty engine bearing mileage, with Fm bearings.

Every speck of it is alike—a tiny grain of alloy of *controlled* copper-to-lead proportion! Billions of them are put together by sintering, on steel strip, to make our Fm *fleet-mileage* bearings. This tough, durable bearing lining is unmatched, *anywhere!*

Fm sintered copper-lead bearings produce maximum mileage in heavy-duty fleet operation.

They are examples of the service know-how that makes Federal-Mogul the first choice brand for bearing replacement. Nation-wide surveys of fleets show Fm bearings are preferred . . . by 2 to 1. *Ask your jobber!*

FEDERAL-MOGUL SERVICE

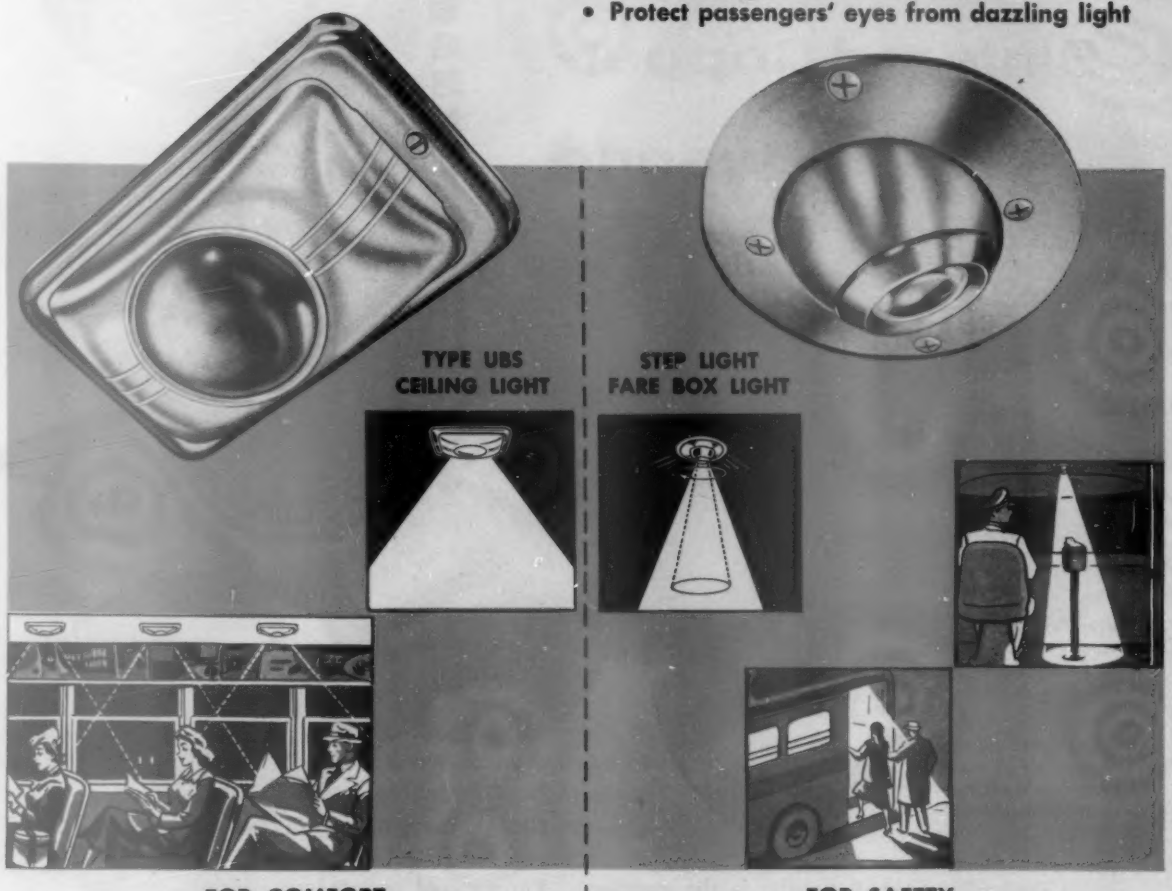
Division of Federal-Mogul-Bower Bearings, Inc.

Fleet BEARING FEDERAL Mogul SERVICE *Mileage*

GET IT FROM YOUR JOBBER

LUMINATOR Lighting for Comfort Lighting for Safety

Magnifying lenses—
- **Build up high intensities**
- **Direct the light where it is wanted**
- **Protect passengers' eyes from dazzling light**



FOR COMFORT

Luminator advanced oval magnifying lens for interiors prevents glare and builds doubled intensity on the reading plane. The light from each unit is controlled to prevent shadows from being thrown on the passenger's reading matter and to keep bright light from dazzling passengers. This lighting is the minimum that assures public preference for your buses.

FOR SAFETY

Used as a Fare Box light the triple condensing lens controls the beam sharply and doesn't disturb the driver. Adjusted for use as a Step Light, the Luminator lens lights the step and the ground without dazzling passenger's eyes. Luminator optical and mechanical design provides an additional safety factor for passengers entering and leaving the bus.

You are cordially invited to visit Luminator's Lighting Laboratory to see the latest incandescent and fluorescent developments in full-scale mockups.

LIGHTING ENGINEERS • DESIGNERS • MANUFACTURERS

LUMINATOR inc.

120 NORTH PEORIA ST., CHICAGO 80, ILLINOIS
IN CANADA: RAILWAY AND POWER ENGINEERING CORP.

Another successful combination...

Fitzjohn Road-Runner with Tropic-Aire—Carrier air conditioning

The Fitzjohn Road-Runner above is a recent addition to the Atlantic Trailways fleet, Macon, Georgia... equipped, of course, with Tropic-Aire—Carrier air conditioning

Carrier
TROPIC-AIRE

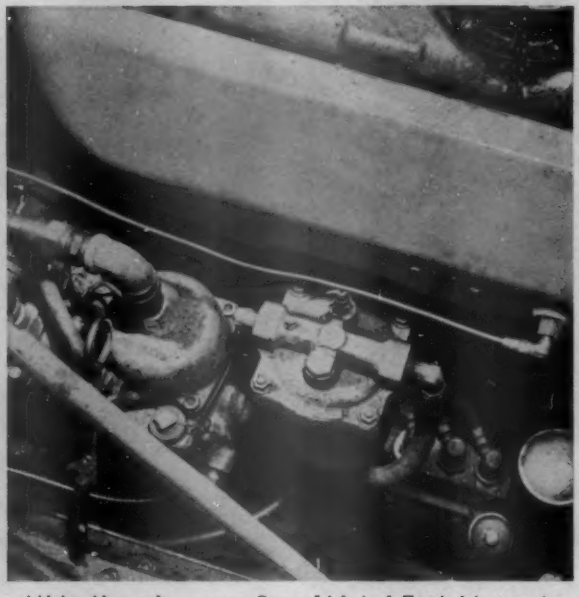
TROPIC-AIRE, INC., 5201 W. 65th Street, Chicago 38, Illinois

Tropic-Aire, Inc., is a subsidiary of McGraw Electric Co.

The Engineer's Field Report

CASE HISTORY
PRODUCT Chevron Pressure Primer System
FIRM Consolidated Freightways Inc., Portland, Oregon

Pressure Primer System starts diesels on 1st or 2nd turn with regular batteries—at minus 40°



BELOW ZERO starting temperatures are common 5 months a year for Consolidated Freightways equipment operating in Mountain and Plain States. Two hundred and forty-four of the company's tractors are equipped with the Chevron Pressure Primer System. Since this installation, rigs start on first or second turn at 40° below zero—using regular equipment batteries! Normally in these sub-zero temperatures, regular batteries give out after about 4 turns. Sure starts plus the fact engines are primed with Chevron Pressure Primer bulbs, controlled from within the cab, saves Consolidated Freightways important man-hours and speeds operating schedules. Picture above (left) shows a Chevron Pressure Primer Discharger mounted on steering column. Highly volatile priming fuel is atomized through tubing into manifold (right) under 250 lbs. pressure.

FREE FOLDER tells you more about Chevron Pressure Primer System and how to install it on different engines. Write or ask for it today.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor, write or call any of the companies listed below.

CHEVRON

TRADEMARK "CHEVRON" REG. U. S. PAT. OFF.

Why Chevron Pressure Primer System helps starting

Volatile Chevron Priming Fuel atomizes in induction system at temperatures as low as -65°F. Pressure or weakest spark from engine fires mixture.

Simple, rugged discharger prevents fuel leakage. Small, safe steel bulbs protect fuel from water and dirt.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

If it's marked TG it cuts belt costs in half

Operating cost records of leading transit companies show: Gates Coach Belt—the belt marked TG—often lasts more than *twice* as long as other belts.

Double service life cuts belt costs *in half.*

That's why it pays to specify the belt marked "TG." This mark is Gates' designation for the belt *specially engineered* for rear engines.

HEAT RESISTANT AND OIL PROOF

Stop-and-start operation of buses imposes heavy loads on rear engines and often produces intense heat. Gates Coach Belt (TG) contains special rubber compounds to make it *heat resistant* and *oil proof.*

A Gates Belt Specialist—available through your Gates Jobber—will make cost-cutting belt recommendations without obligation. And your jobber will supply you promptly with the Gates Coach Belts you need.

The Gates Rubber Co., Denver, Colorado—
World's Largest Maker of V-Belts.

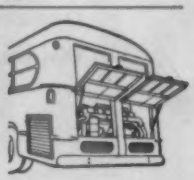
Look for TG*

on the belt itself as well as on the label of every belt you buy for rear engine service. "TG" means the belt has been specifically engineered for rear engines.

*Reg. U.S. Pat. Off.

The mark of specialized research Gates TPA 78

Gates Coach Belts



Specially Engineered for Rear Engines

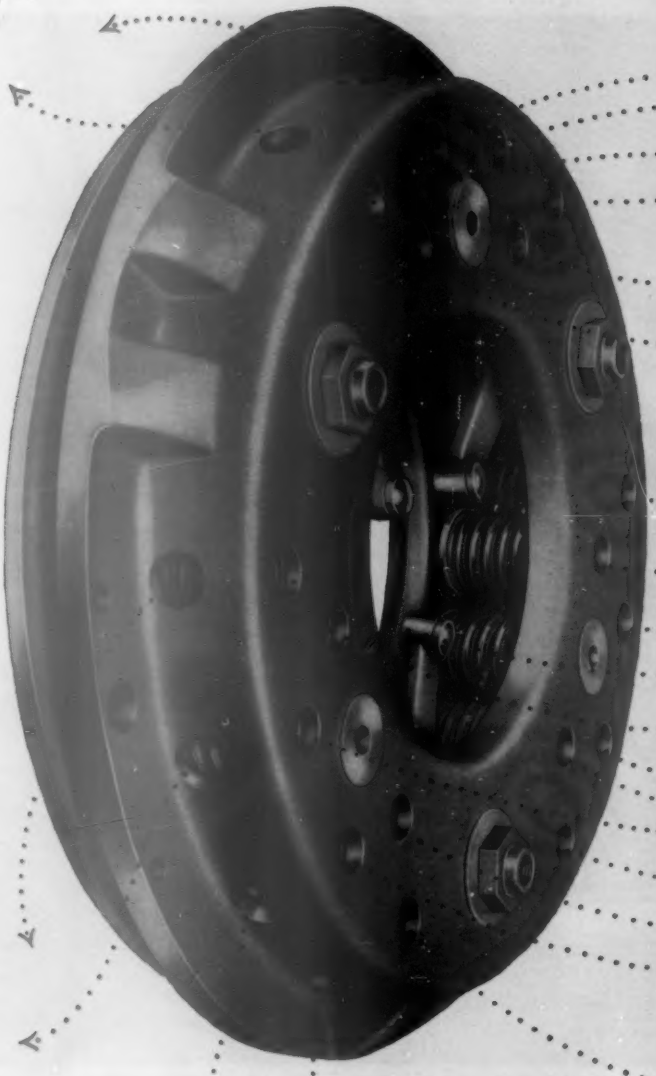
Use this One Grease... "Universally"

You *can* simplify maintenance, and do a top-notch job too, when you switch to Sinclair LITHOLINE® Multi-Purpose Grease for trucks and buses. This multi-purpose lubricant and the "one grease – one gun" system cuts service time to a minimum. It gives lasting protection for chassis, wheel bearings, grease lubricated water pumps and universal joints. LITHOLINE is easy to apply in all seasons. It lasts longer in any road service because it resists water-washout, doesn't thin in summer heat, and won't oxidize and cake in bearings.

The advantages of this superior multi-purpose lubricant will pay off by protecting against wear, saving shop time, and reducing your grease inventory. Start saving money today with a call to your local Sinclair Representative for full information . . . or write for the new LITHOLINE booklet offered by Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR LITHOLINE

Multi-Purpose Grease



air-conditioned cover keeps new clutch c-o-o-l

Frictional heat has little effect on the new *Lipe* Direct Pressure Clutch. Air circulating through the cover's 33 ventilating holes dissipates heat rapidly. The result is a heavy-duty clutch singularly free of burned facings and warped pressure plates. A clutch whose low maintenance cost matches its low first cost.

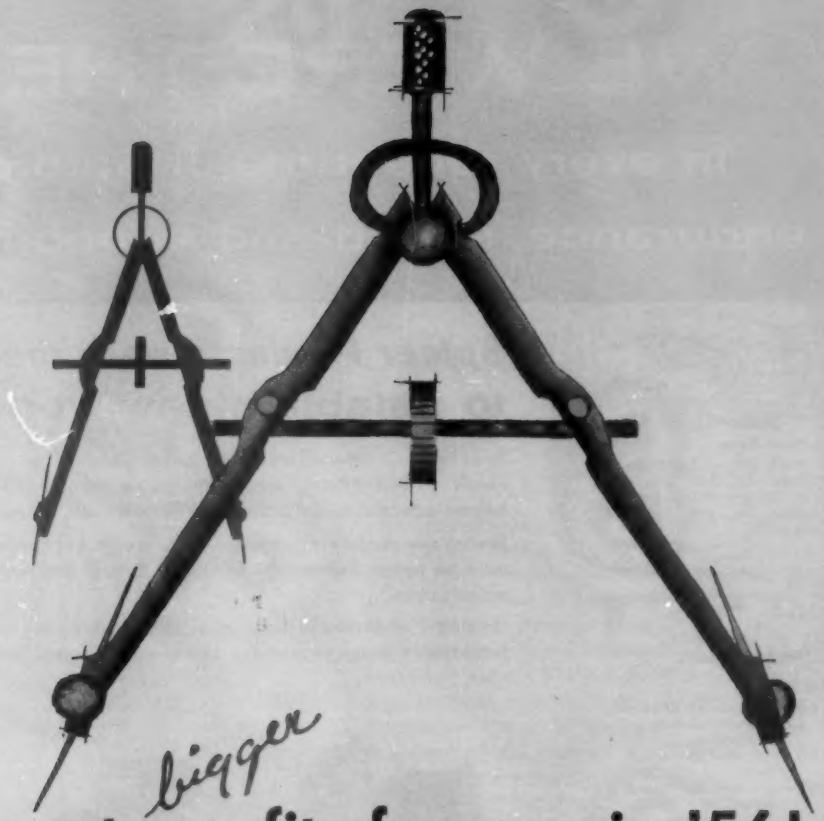
Lipe Direct Pressure Clutches now available: 13", 14", 15" single-plate, 14" and 15" two-plate. Send for complete information.

For the name of your nearest Authorized Lipe Distributor, look under "Clutches" in your telephone directory. Or, write us.

Manufacturers of Automotive Clutches & Machine Tools

LIPE ROLLWAY

Lipe-ROLLWAY CORPORATION SYRACUSE 1, N. Y.



forecast: bigger profits for you in '56!

Generally, predictions of any kind are uncertain . . . unless the outcome depends upon factors over which the forecaster has absolute control.

In this case, we have the control and we are confident of the outcome.

Consolidated equipment is built to save money for your company . . . designed to meet the exacting requirements of modern transportation at a reasonable cost . . . engineered for ease of installation and low-cost maintenance . . . ruggedly built for dependability and long life.

Next time, specify Consolidated equipment . . . forecast bigger profits every year!

Door engines • Automatic treadles • Sensitive edges • Brake, accelerator and control interlock • All-electric push-door operators • All-electric or pneumatic door operators • Safety switch panels • Heating equipment

consolidated

METAL PRODUCTS CORP.

Since 1889

NEW YORK — CHICAGO

For complete information address: 413 No. Pearl St., Albany, N. Y.

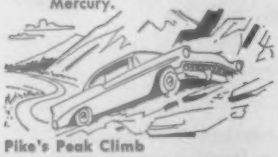
WE WERE THERE!

In every recent major automotive endurance, speed and economy test...

Mexican Road Race
1954—Lincoln, 1st and 2nd places.
1953—Lincoln, 1st, 2nd, 3rd, 4th, 7th, 8th and 9th places.
1952—Lincoln, 1st, 2nd, 3rd and 4th places.

Stock Car Races
1955—30 races won by Chevrolet, 5 races won by Ford Thunderbird.
1954—24 races won by Hudson Hornet.
1953—47 races won by Hudson Hornet.

Mobilgas Economy Run
1955 Sweepstakes Winner—Studebaker.
1954 Sweepstakes Winner—Studebaker.
1953 Sweepstakes Winner—Ford 6.
1952 Sweepstakes Winner—Mercury.



Pike's Peak Climb
New world record set September 9, 1955, by Zora Arkus-Duntov driving a 1956 Chevrolet. Time 17 minutes, 24.05 seconds.

Durability Run
25,000-Mile Durability Run in 238.77 hours total elapsed time for an average speed of 104.7 MPH established by a Packard Patrician.

Spicer Products were there . . . helping to establish new world's records!

Since 1904 . . . when Clarence W. Spicer adapted the first universal joint to automotive needs . . . Spicer Products have helped set many new performance records, and have helped establish new standards of motor vehicle value in America's greatest industry.

In each new model year, original Spicer designs or cooperative developments serve to increase power transmission efficiency, through engineering excellence and quality of manufacture.

No matter what type of automotive vehicle you make . . . no matter what type of power transmission design you need . . . Spicer engineers and Dana resources can serve you well.

Spicer

DANA CORPORATION Toledo 1, Ohio

SPICER PRODUCTS: TRANSMISSIONS • UNIVERSAL JOINTS • PROPELLER SHAFTS • AXLES • TORQUE CONVERTERS GEAR BOXES • POWER TAKE-OFFS • POWER TAKE-OFF JOINTS • RAIL CAR DRIVES • RAILWAY GENERATOR DRIVES STAMPINGS • SPICER and AUBURN CLUTCHES • PARISH FRAMES • SPICER FRAMES

Flats on the road cost money—catch 'em in the shop!

Flats on the highway can make the difference between profit and loss, yet a simple daily routine can keep your trucks rolling up profits. Gauge and record air pressure each day. Slow leaks will show up on your chart, and you can catch most flats before they happen—in the shop where they're cheap to fix.

The accuracy of your gauging-inflating equipment can be certified quickly with a Schrader 8106B Trutest Special Gauge. And air lines operate faster, better with Schrader Chucks, Couplers, Chuck Gauges and Accessories. For all tire inspections, use Schrader 7188BH All-Purpose Service Gauges. And always use genuine Schrader Tire Valves, Cores and Sealing Caps guaranteed airtight even at 250 lbs. pressure!

Schrader Products important to best tire maintenance

8106B for checking all other gauges

7188BH All-Purpose Service Gauge

3650 Type Chuck Gauge

7611 Heat-resisting Core

7612 Heat-resisting Cap

A. SCHRADER'S SON
Division of Scovill Manufacturing Company, Incorporated
470 Vanderbilt Avenue, Brooklyn 38, N. Y.

Schrader®
ESTABLISHED IN 1844

FIRST NAME IN TIRE VALVES
FOR ORIGINAL EQUIPMENT AND REPLACEMENT

Which comes first – the battery or the guarantee?

Recently, Delco increased the guarantee on Extra-Duty batteries to four years. It was an unprecedented move for a nationally known, nationally used battery, and the fleet industry was quick to express its approval.

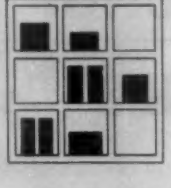
But the really important part of this was not so much the change in the guarantee, but the change in the battery itself. Anyone can increase a guarantee. Delco did it only after years of developing, testing and proving the new battery. This required the combined engineering facilities of both General Motors and Delco.

After the performance of the battery was proved under rugged fleet conditions, the guarantee was written. It's a four-year guarantee that's tailor-made to fit the battery—and you can be assured that the battery is every bit as good as the guarantee says it is.

WET or DRY CHARGE, Delco Extra-Duty batteries will give you the lowest cost per mile of operation. AND Delco batteries are available everywhere. Remember these facts when you buy batteries for your fleet.

EASILY STORED

Delco Dry Charge batteries can be stored indefinitely and still give you instant, factory-fresh power without an initial electrical charge.



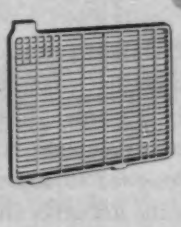
6 & 12-VOLT MODELS

There's a right Delco battery built for every specific application and type of service, including the new 12-volt group for 12-volt electrical systems.

ZIP-CLIP-POUR

That's how easy it is to fill a battery with Delco's new electrolyte package that is safe, convenient and disposable.

LOTS LONGER LIFE



Delco's unique grid design increases battery life as much as 100 percent by even distribution of current and superior resistance to overcharge and corrosion.

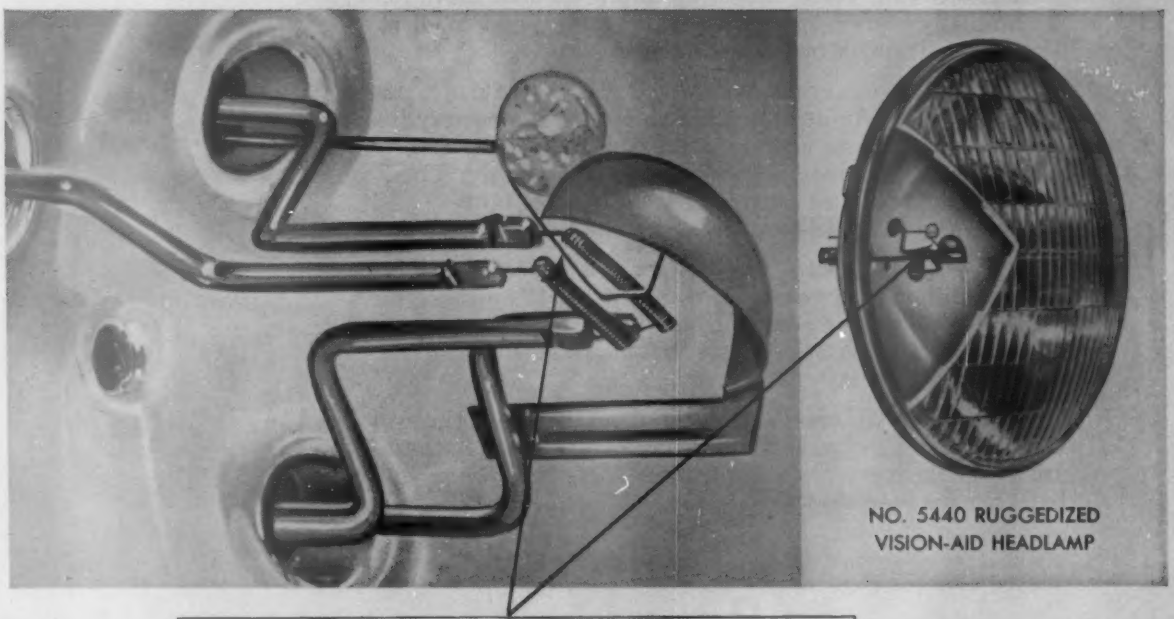
GM GENERAL MOTORS PARTS SALES

UNITED MOTORS SYSTEM

AVAILABLE EVERYWHERE THROUGH DELCO BATTERY DISTRIBUTORS

TUNE IN | ON TV.....Spectacular "Wide Wide World," NBC Network.
ON RADIO..Lowell Thomas Newcast on the CBS Network. | See your local listings for time and station.

TUNG-SOL VISION-AID HEADLAMP *Ruggedized* FOR TRUCK SERVICE



New "Filament Anchor" protects against premature burnouts

This is the headlamp with the nationwide reputation for standing up under toughest service conditions . . . for reducing headlamp replacement costs . . . and for keeping drivers out of trouble on the road because of faulty lighting.

The "filament anchor" . . . an exclusive Tung-Sol safety feature . . . provides a ruggedness that lengthens lamp life. The "anchor" keeps the top filament from sagging and prevents shorts and premature burnouts. The entire filament structure is designed to absorb shock and vibration. It safeguards the filaments and maintains accurate beam focus under all operating conditions.

Tung-Sol No. 5440 Vision-Aid Headlamps embody all the newest principles of headlamp engineering. They have the highest candlepower ever built into a production headlamp. Their improved passing beam has the greatest range, focussed for clear illumination of the vital right lane and road shoulder. And the shielded low beam filament eliminates glare-back in fog, rain and snow.

Other lamps in the complete Tung-Sol truck line have been ruggedized where service conditions indicate the need for extra durability. Standardize on Tung-Sol lamps for safety, economy and dependable service.

TUNG-SOL ELECTRIC INC., Newark 4, N. J.

Sales Offices: Atlanta, Columbus, Culver City, Dallas, Denver, Detroit, Melrose Park (Ill.), Newark, Philadelphia, Seattle. Canada: Montreal.

TUNG-SOL

NO. 5440 RUGGEDIZED

VISION-AID HEADLAMPS

Underfloor compartment in right side of bus houses Model Y-91 Red Seal engine, together with heating radiator, air filter, air-conditioning evaporator and circulating fans, and serves as an accumulating center in which air is heated or cooled as outdoor temperatures may require.

AIR-CONDITIONED
BY
DEPENDABLE RED SEAL POWER

Modern highway buses like this air-conditioned beauty are changing the travel habits of millions, by making it as comfortable to travel as to stay at home . . . With comfort competition as keen as it is today, the choice of cooling equipment assumes new importance, too. Since usage imposes its heaviest loads in the hottest weather, at the very time when failure would be most seriously felt, power dependability becomes an absolute must . . . Continental Motors has been engineering and building power plants for specialized applications for more than 53 years. From this long experience has come engine-building knowhow of an unusual order. And the product dependability resulting from such know-how is a real and tangible thing. It unquestionably explains why more and more of the leading bus manufacturers specify air-conditioning with Continental Red Seal power.

• • •

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ADC* REPORT

LOUISVILLE TRANSIT COMPANY, LOUISVILLE, KENTUCKY

adopts Shell ADC Oilprint Analysis as major oil change yardstick . . .

uses it for faster, surer Preventive Maintenance

LOUISVILLE TRANSIT COMPANY, noted for its preventive maintenance record, has adopted the ADC Oilprint Analysis. Result: reduced PM time and outstanding economy in labor and parts.

The ADC Oilprint Analysis enables fleet operators to test the condition of crankcase oil in the short time allotted for re-fueling and crankcase oil checks . . . a dependable evaluation in *minutes*. It answers the question "When do I change my oil?", thus eliminating the draining of usable oil and the risk of using oils loaded with contaminants.

ADC Oilprint Analysis can take an active part in your PM program. Let us demonstrate how it can effect savings for your fleet.

*Trademark

SHELL OIL COMPANY

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SHELL

After the Great Ford Foundation Gift . . .

What Still Remains To Be Done To Provide Decent Faculty Pay

The Ford Foundation's gift of a half billion dollars to our privately supported colleges, medical schools and hospitals, now being distributed, is magnificent. But it will be much more magnificent if it inspires completion of the job to which it gives a lift. So far as the colleges and universities are concerned, this job is primarily to rescue their faculty members from being second-class citizens economically.

Even in a period when we have become accustomed to astronomical financial figures, a half billion dollars remains an eye-popping gift. In fact, it is so imposing that a good many people who don't read the fine print are apt to conclude that it must just about solve the financial problem to which it is addressed.

Goes Only a Small Way

However, we have allowed college professors to fall so far behind the parade financially that the share of the Ford half billion dollar gift going directly to the improvement of faculty salaries ($210 million) will go only a small way financially toward doing what is necessary to provide adequate salaries.

Completion of this job for our privately supported colleges and universities calls for:

1. An increase in faculty salaries at least five times as great as that made possible by the Ford gift merely to restore salaries to their 1939 purchasing power level and an increase fifteen times as great to provide adequate salaries today.

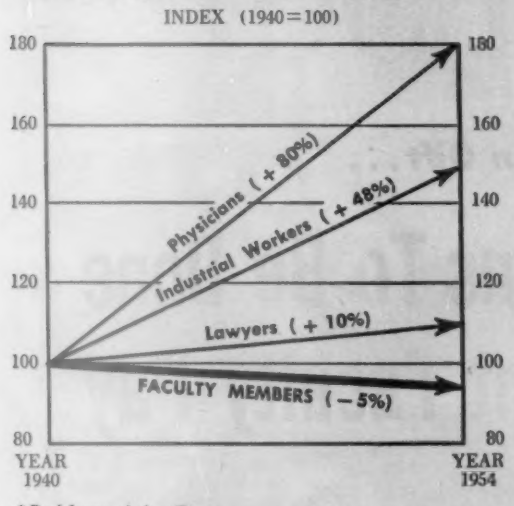
2. Some difficult and courageous decisions by the heads of the colleges and universities in apportioning the grants received by them.

Terms of Gifts to Colleges

The $210 million of the Ford Foundation gift going specifically to improve faculty salaries is being distributed on the following basis: Each of 615 privately supported, regionally accredited liberal arts and science colleges and universities receives a gift about equivalent to its last year's teaching payroll. For ten years only the income from these gifts is to be devoted to raising faculty salaries. After that all the money can be spent in any way the institutions receiving it see fit. There is no requirement that universities having other than liberal arts and science schools limit use of the gifts to improving salaries in these schools alone. They can spread it right through all their faculties if they wish.

In addition to the gift of $210 million specifically directed to increasing faculty salaries, another gift of $50 million goes to a group of 126 institutions selected for specially noteworthy leadership in improving

What's Happened to College Faculty Salaries*



* Real Income before Taxes.

Source: Council for Financial Aid to Education, U. S. Dep't of Commerce: U. S. Dep't of Labor.

the status and pay of teachers. For these schools the individual gifts add about 50% more to the amounts coming from the $210 million fund. They can be used to improve faculty salaries if the institutions choose to do so, but this is not required by the terms of these gifts.

The $210 million plus the $50 million should yield an income of $10-$13 million a year. Even if all this is used to raise salaries, it will be only a small step, however worthy, toward the $200 million per year the colleges need to meet their salary requirements adequately.

Helps Some Who Need It Most

In focussing its gift to improve faculty salaries in privately supported liberal arts and science colleges, the Ford Foundation aims at least part of the help at the spot where it is most desperately needed. Numerous surveys have indicated that the most poorly paid of all college and university faculty members are those in small, privately endowed liberal arts colleges.

But the overshadowing fact is that the teachers in our colleges and universities as a whole are badly underpaid. Just how badly is indicated by the chart above which first appeared in an earlier editorial. (Figures later than those for 1954 are not available.)

The Ford gift will turn the indicator of faculty salaries, which now lies far below the general salary trend, upward a few points. And it will do this in some places where salaries are below the wretched average shown by the chart.

But the Crucial Test Remains

College and university administrators will have the opportunity to extend further the process of getting the help provided by the Ford Foundation gifts where it is most needed. In general, this will mean giving it to senior faculty members, in order to hold experienced teachers and make college teaching attractive as a career. But to make such a division in many schools will take extraordinary fortitude.

The crucial test of the success of the enterprise of the Ford Foundation in raising faculty salaries will lie in whether it prompts the rest of us — college alumni, individuals, business firms and legislators alike — to see that it is a great beginning, not a signal for a recess.

Even with the Ford gifts providing $10-13 million a year, our privately supported colleges and universities must have an increase of about $190 million a year to provide decent faculty salaries.

This is a job far beyond the capacity of the Ford Foundation, imposing though that is. It is a job far beyond the capacities of a few hundred large corporations and a few thousand wealthy individuals. If it is to be done, it is a job at which all of us must work with a will.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

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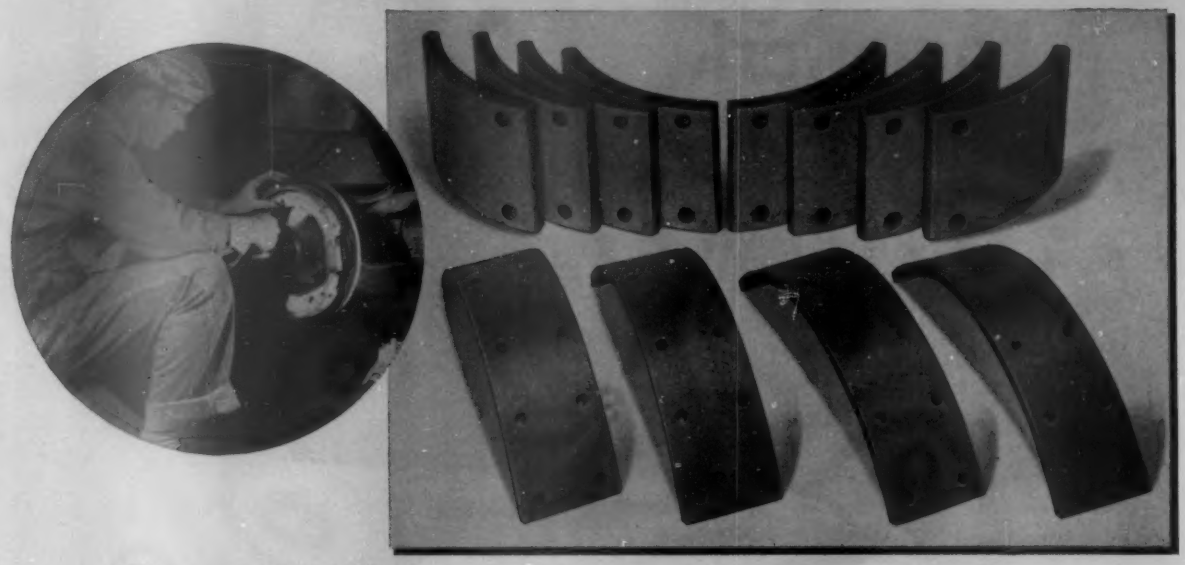
AND NEED FEWER BRAKE ADJUSTMENTS WITH Wagner® BRAKE LINING



Available in blocks... sets... rolls... slabs... cut segments... and on shoes

Wagner Brake Lining will give your bus fleet more miles between relines with fewer brake adjustments and less drum reconditioning. That means lower maintenance cost per mile . . . less revenue-wasting "down time."

Top quality Wagner Brake Lining is uniform in density, composition, and frictional qualities throughout its entire service thickness. It withstands extremely high drum temperatures . . . will never compress, absorb moisture, or deteriorate with age. Contains no harmful abrasive materials to damage drums. Wears slowly and evenly.

Wagner Brake Lining is available in blocks, sets, rolls, slabs, cut segments, and on shoes—either "bonded-on" or "riveted-on". There are more than 100 width and thickness combinations . . . over 400 individual sets . . . and over 350 block sizes. Coverage is complete for all vehicles.

You can get Wagner Brake Lining as well as Wagner Lockheed Hydraulic Brake Parts and Fluid from ONE convenient, reliable source—your nearest Wagner Jobber. See him today!

You can depend upon Wagner Quality because Wagner Products are used as original equipment by manufacturers of cars, trucks, buses, and trailers.

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America has homework to do!

THERE'S PROBABLY a lot about your town that makes you want to brag a bit about it.

But there's one thing you *can't* be proud of. And it's a shame you share with just about every other community in America.

The homes where far too many people live are a disgrace. Slums, semi-slums, housing blight are with you. Fixing them up is the homework to be done.

If your town is like most in the U. S., here's what the figures show: 1 out of every 10 homes are rock-bottom slums. Nearly one-half urgently need basic repairs.

But slums are something that is happening on the other side of town, you may say. The problem isn't mine.

Slums are YOUR homework

Distance is no barrier against the threat and cost of housing blight.

Your taxes go up because it takes more money for your town to fight the diseases and delinquency and poverty spawned in the slums. The security of your family goes down because the slum is the natural parent of crime.

Where your business comes in

Every firm has a responsibility toward the town where it's located. Part of it is to support community improvements as any other good citizen would.

Some slums are beyond repair. They must be torn down and a fresh start made. Others can be made to conform to accepted living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Civic and individual groups must have business backing . . . *your* firm's backing if they are to succeed.

Follow the course of Action!

A group of Americans from every walk of life has joined together in a non-profit organization to combat home and community deterioration, A.C.T.I.O.N., the American Council To Improve Our Neighborhoods.

Send today for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It lists booklets, research, check-lists, and other material which can help you. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

American Council To Improve Our Neighborhoods

2 make a team for Diesels!

A great Diesel team—Gulf Dieselect Fuel and Dieselube Motor Oil H.D.—assures you maximum performance and keeps your operating costs in line.

1. Gulf Dieselect Fuel

This exceptionally clean burning fuel helps prevent fouling of oil control rings and reduces ring sticking.

It is a straight run distillate (contains no cracked material) that does not form harmful deposits in tanks, filters, and injectors. It has high volatility, a high cetane index and low end point.

You can be sure of cleaner valves and minimum smoke with Gulf Dieselect Fuel because it burns so evenly and completely. Try it for a new kind of engine performance.

2. Gulf Dieselube Motor Oil H.D.

The Diesel lubricating oil that combines quality and economy —that delivers high mileage, yet is low in cost.

Gulf Dieselube Motor Oil H.D. is a heavy-duty type oil that not only provides effective lubrication, but has the right level of detergency to prevent harmful deposits on pistons, piston rings, and oil screens.

Let us prove that Gulf Dieselect and Gulf Dieselube Motor Oil H.D. can do a better combustion and engine lubrication job in your Diesel fleet. Contact your nearest Gulf office, or write on your letterhead to Gulf Oil Corporation, 1822 Gulf Building, Pittsburgh 30, Pa.

GULF

Gulf Oil Corporation
Gulf Refining Company

The finest petroleum products for all your needs

when you install ADLAKE

you say goodbye to window sash troubles!

Your passengers *want* ADLAKE windows, because they're free from drafts, leaks, and rattles. And even your elderly lady passengers can raise and lower the windows easily! You (and your comptroller) will want ADLAKE windows because they put an end to costly maintenance.

For more information about ADLAKE Aluminum Sash, write The Adams & Westlake Company, 1154 N. Michigan St., Elkhart, Indiana. No obligation, of course.

Adlake 99th year of serving the transportation, building and control industries

The Adams & Westlake Company

Established 1857 • Elkhart, Indiana • New York • Chicago

Can You Save on Premiums?

Continued from page 53

insured to secure immediate benefit from good experience much the same as they would under self-insurance while at the same time having the benefits of the expert claims, loss prevention, and legal services of an insurance company behind them at all times. It is also possible for fleets as small as $10,000 total annual premium to qualify for a package plan if bought on a 3-year basis because the total premium to be adjusted at the end of the 3-year plan would then be $30,000. Here are the advantages:

1. Insurance premiums are based on manual rates for the average risk modified by experience rating dependent on the size of premium separately for workmen's compensation, general liability, and auto liability. Since the workmen's compensation premium on a bus company is generally rather small in comparison with the auto liability premium, the experience credit which a better-than-average insured can secure on the workmen's compensation is rather limited even with a very excellent experience. However, under a combined retrospective rating plan, the premium for each line can be determined very nearly in proportion to the losses incurred, thereby permitting the insured to get the full benefit of good experience on each type of coverage at the same time giving him the protection of an overall retrospective maximum.

2. By combining your WC with your auto retro, you save four to five per cent over what the insurance charge for the maximum would be on a separate WC retro. On a $20,000 WC premium this would amount to a thousand dollar saving and on higher premiums, greater savings.

3. By combining all coverages with one company, you have one claims representative handling an accident involving two or more coverages instead of several from different companies. Also, the same safety engineers who call at your terminals and stations for vehicle accident prevention work will, while they are there, advise on employee injury hazards and non-vehicle hazards to the public. This means more frequent attention to these hazards because engineers call more frequently on vehicle safety problems (larger premium and exposure).

There are several different methods or formulas for determining the earned premium retrospectively. This one happens to be ours, so the "earned premium" would be subject to our current dividend of 15%. Where dividends are paid, they are paid on the final earned premium, not on the paid premium.

Because of this, the factors used to develop the earned premium in our case should be reduced by 15 per cent when comparing them with the cost factors in other plans of non-dividend paying companies.

From the description of how this package plan works, it becomes clear that it provides an effective way for an insured to determine his own insurance costs for other than catastrophe losses.

Three-Year Plans • There is a trend toward three-year plans in order to level off the insurance costs from year to year and to make package plans available to risks which would be too small on an annual basis to lend themselves to retro rating. This suplements increasing the volume of subject premium by including as many lines of coverage in the plan as is permissible; i. e., WC, CGL, auto liability. On truck fleets, we have package plans where the cargo liability is also included. The retro earned premium is computed for all lines combined and then distributed internally by us over the various lines.

Package plans should be considered as a long-range program and not selected from year to year in an effort to outguess the future. If the fundamental idea is sound, it can only pay off through constant application, not intermittent applications. It is a desirable form of rating for the following types of risks:

1. Risks which are better than the average in their classification but which are not large enough to be entirely self-rated and thus which do not get full credit for their good experience under the experience-rating plan.

2. Risks which may have operated over a period of years under an experience rating credit and which due to a change of ownership must revert to manual rates.

3. Risks which have been self-insured or which are contemplating self-insurance. Package rating permits them to secure the benefits of self-insurance to a large degree but still retain the advantages of being covered by an insurance carrier.

Some difficulties of retrospective insurance:

1. From an accounting and budgeting standpoint, the motor carrier never knows exactly what his insurance costs will be for the coming year or the current year.

2. The retro return, or additional premium charge, may come at an inconvenient time in the company's tax picture.

3. The fluctuation in reserves on open cases as the litigation progresses causes concern to the motor carrier who is trying to estimate his adjusted premium in advance.

Some advantages of retrospective insurance:

1. It enables medium to large motor carriers to have their premium determined on an actual-cost basis depending on normal losses, yet still retain the insurance protection provided by the maximum and the loss limit per accident.

2. It provides an urgent and continuous incentive for loss prevention effort since the savings from fewer accidents are retroactive rather than spread over future years by the slower, less tangible method of experience rating. Some fleets give their safety personnel a portion of any retro return premium earned.

3. Since part of the expense premium is secured as a function of the losses through the "loss conversion factor," a motor carrier may save on part of his expense premium as well as on his losses by having good experience.

4. For the motor carrier, who has had consistently increasing loss experience but is now ready to do a real job of loss prevention throughout his operations, package retros have a double-edged advantage . . .

a. The upswing increases his desirability to underwriters who would like to take a chance with him on the basis of the newly planned safety setup but who can see that the prospective rate has proved inadequate in each of the past years. (Rates never catch up as long as losses continue to climb each year.)

b. The downswing enables him to "cash in" on his new safety system more quickly if it proves effective. Instead of his insurance costs staying up for two or three years while the rating catches up with his improved experience, his insurance costs come down almost simultaneously with his losses through retro adjustments while longer range

Continued on next page

BUCK-CYCLONE CLEANER

FOR REMOVING "TRASH" FROM TRANSIT BUSES

Patents granted

Chicago Calumet District Transit Company
Hammond, Indiana

ONE MAN CAN THOROUGHLY CLEAN A BUS *INTERIOR* IN . . .

3 MINUTES!

Reported Savings:

$14,000 per year

$9,600 per year

$6,075 per year

MANUFACTURED EXCLUSIVELY BY

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CHICAGO

Can You Save?

Continued from page 93

policy rate reduction is materializing. Also, the retro incentive keeps the pressure on his new safety system to minimize the chance of any back-sliding.

5. The safety savings from retro help pay for the fleet safety department on a pay-as-you-go basis that enables management to build up this department more rapidly without additional drains on working capital.

After weighing the pros and cons, I seem to have arrived at a conclusion which can be expressed very briefly—Package retros are more work, but it's worth it!

The Fare Box . . .

Continued from page 59

Jackson City Lines, Miss. • Wants to increase bus fares from straight ten cents to 15 cents or two tokens for 25 cents. The city's mayor threatens to break the firm's franchise.

Increases Granted

NY Private Lines • Has been given Board of Estimate approval for two-cent fare increase, from 13 to 15 cents. City-owned lines had already charged that much.

Columbus Transit Co., Ohio • Has been granted City Council permission to charge patrons straight 15-cent cash fare. Children will pay seven cents, while those under six will ride free. No charge is to be made for transfers.

Rochester Transit Corp., N. Y. • Will henceforth charge 20 cents for bus and subway rides instead of 15 cents. Tokens will continue to be sold at the rate of 15 cents each.

Montgomery City Lines, Ala. • Will increase fares by 50 per cent, bringing adult fares from ten to 20 cents and children's fare from five to ten cents.

Hilltop Bus Co., Pa. • Has PUC permission to raise cash fares from 15 to 20 cents. Twenty-trip tickets will also be raised from $2.50 to $3.40.

Savannah Transit Co., Ga. • Received a boost from four tokens for 35 cents to five for 45 cents, or from 8.75 cents per token to nine cents.

Bouquets for Hyde

Continued from page 55

way in 1942 we paid $17,500,000.

"Today the system boasts a book value of $80,000,000.

"Even in these days of the floating cypher, that's a valuable hunk of property to be owned by the city.

"Owned by you and me, the 800,000 taxpayers in the city, the 700,000 indirect tax payers who live around Cleveland, who use the Cleveland Transit System."

"Why Swing on a Champ?"

"We who own the system, we who benefit by it, seem to be the first to foulmouth it.

"This, of course, is one of the penalties a public service has to suffer. Certainly, however, it needn't suffer all the time.

"We own the system, the system's doing fine, let's brag a little. After all, it's our business.

"When revenue is up, ridership has to be up. Riders pay the revenue, and no fancy figuring can deny this.

"Sure, CTS hasn't published ridership figures for some seven or eight years. They're difficult to ascertain correctly what with transfers and weekly passes and schoolkids passes.

"CTS will give you paid-fare figures any time you want them.

"It's dollars, not statistics, that pay."

"Should Hyde His Light?"

"Recriminations don't pay the bills, either. So what if CTS's Don Hyde is a part-time consultant to help straighten out problems in Washington?

"This town should feel honored to have so valuable a man heading its own transit system.

"What if Don Hyde makes speeches on transit in other cities?

"This city should feel proud he's invited, proud he's an officer of the American Transit Association.

"He's recognized as an outstanding authority elsewhere. He and his cohorts are making a mark here. Want to see part of it?

"Just gander at the paving of the streets from which once protruded street car tracks. CTS did this, plus ploughing back $25,000,000 into new equipment in the past 13 years.

"This adds up to a yearly profit of about $2,000,000.

"A continuing profit despite a five per cent fare increase last September which would have cut down the number of riders.

"Our transit system's doing good.

"What's with us that we can't show it a little good will?"

ROCKWELL

ELECTRIC FARE REGISTERS

Measure your revenue ... Protect your Profits

A TYPE TO FIT ANY AUDITING SYSTEM

Made in two models—the locked vault type (shown) and the type which returns coins to driver after registration. Both machines total pennies, nickels, dimes and quarters on a single cash counter. Two sizes of tokens register in units on separate counters. Newly designed, wide angle inspection area provides utmost visibility. Mutilated coins and foreign objects are automatically trapped and rejected. Precision made, fully guaranteed. *Write for literature.*

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ROCKWELL MANUFACTURING COMPANY

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THERE'S NO SUBSTITUTE for LUBER-FINER'S ENGINEERED PROTECTION

YES! IT'S WHAT'S INSIDE THAT COUNTS

The Efficiency of Luber-finer's Exclusive Patented Process HAS NEVER BEEN EQUALLED!

USE ONLY GENUINE Luber-finer DIESELPAKS

Only a Luber-finer Unit *Plus* a Genuine Luber-finer Pack can give the Exclusive Patented Filtering Process that has made Luber-finer The Standard of The Industry Since 1936!!

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1. REFINING PACK

Introduced to the public in 1936 for use with straight mineral oils, fuel oils, hydraulic oils, and inhibited industrial oils.

2. DIESELPAK

First made available in 1941, the DIESELPAK was primarily designed for use with H.D. detergent compounded oils and has also achieved outstanding results when used with fuel oils and straight mineral oils.

DON'T BE MISLED BY PRICE ALONE!

There is no substitute for DIESELPAK'S Patented Filtering Process for H.D. Compounded oils AT ANY PRICE!

The DIESELPAK cleans more oil faster —keeps it CLEAN longer—and gives more service and better engineered protection than ANY of the substitute filtering elements being offered for Luber-finer units.

IT PAYS TO GET THE BEST!

STANDARD OF THE INDUSTRY SINCE 1936

Luber-finer Units are Standard and Optional Equipment on America's Leading Diesel Trucks, Tractors, Stationary Engines.

Write for Complete Information to Dept. 53

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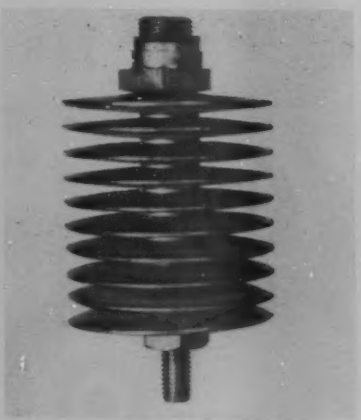
2514 S. Grand Ave., Los Angeles 7

WHAT'S NEW

Continued from page 51



Permanent Porous Filter . . .

. . . made of stainless steel is available.

These filters in complete stock units, ready for use, are said to provide considerable savings for all types of filter service.

They are reputed to have superior filtration efficiency, chemical resistance and high temperature resistance, and in addition a fine particle removal with low pressure drop.

Further, the manufacturer claims the price has been reduced 30 to 50 per cent, within the range of the cost of base metal filters with paper, cotton and wool cartridges now in use. *Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, New York.*

Commuter Bus Seat . . .

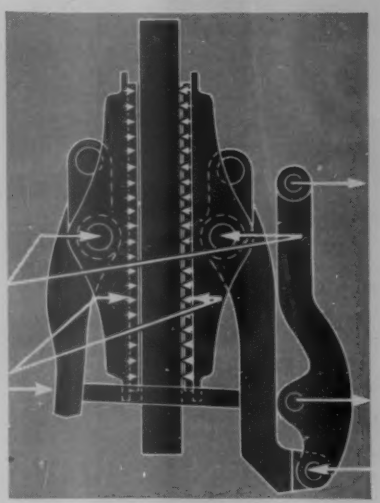
. . . designed for maximum comfort on long hauls is now available.

Model 5405 has spacious seating area for the passenger, foam-rubber back and spring cushion and a set-forward foot rest. Seating fabrics are of woven or vinyl-coated materials.

The seat has a 16-gage, one-in. O.

an ACCO product

Tru-Stop Brakes

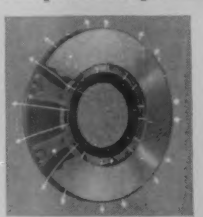


Smoother Stops... Longer Lining Life

TRU-STOP disc-type mechanical brakes have long been recognized as the outstanding emergency brakes for buses, tractors and heavy trucks. Advantages include:

Controlled, uniform braking pressure

As illustrated above, a pull on the brake lever causes the disc to be squeezed between the flat surfaces of the brake shoes. Pressure is uniform all over the lining. Gives smoother stops and longer lining life.



Air cooling gives longer lining life

TRU-STOP's air-cooled design quickly dissipates heat. Most of the disc (shown above) is exposed to the air even during braking. A jet of cooling air circulates between the disc blades and carries off heat.

TRU-STOPS are provided in 2 or 4-shoe models in disc sizes from 11" to 16". Qualified engineers are available to assist in all brake application problems.

Write for preliminary information and complete design details

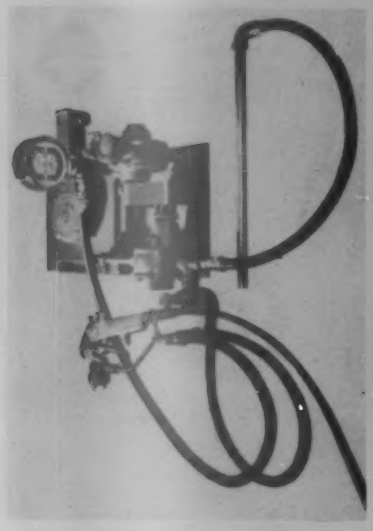
TRU-STOP Emergency Brakes

ACCO

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2
2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

D, tubular frame with oven-baked enamel finish, and rubber-padded, aisle-side arms of the same material. Robe and grab rails are of stainless steel. *American Seating Co., Grand Rapids, Mich.*



Circulating Paint Heaters...

. . . for painting operations requiring a high degree of temperature control are now available.

Known as models E and EE, these heaters are equipped with hot spray recirculating systems to provide constant circulation when spray application is intermittent or irregular.

Adjustable temperature and fluid pressure controls afford uniform performance with all paints and solvents.

Use of paint heaters will reduce paint losses, cut solvents, reduce number of coats required, increase per gallon coverage, reduce orange peel, runs and sags, the manufacturer claims.

Both models are Underwriters approved. *Bede Industrial Products Inc., Cleveland, Ohio.*

Compressor Discharge Hose . . .

. . . for use on bus air brake systems has been announced. Available in sizes from ¼ to one in., the new hose is constructed with a silicone inner tube and features a stainless steel outer braid. The hose has been designed to operate at 125 psi and may be used with Aeroquip's "little gem" fittings.

The hose is said to be resistant to the high operating temperatures encountered in this application. *Aeroquip Corporation, 300 S. East Avenue, Jackson, Mich.*

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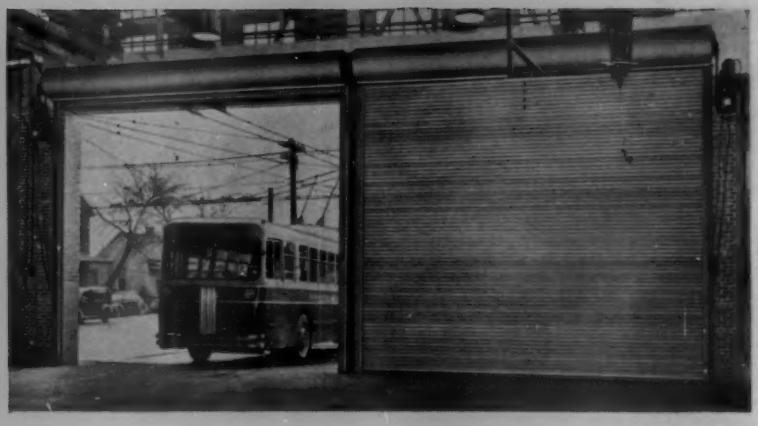
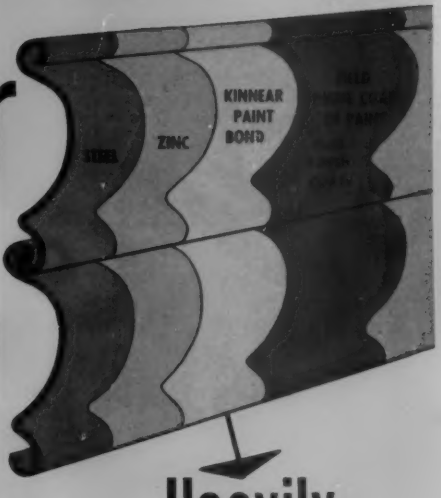


Kinnear Steel Rolling Doors



Heavily Galvanized

Kinnear Rolling Doors are as well known for *extra years of service* as for convenience, space-economy and protection.

Two of the major reasons for this are shown in the drawing above at right.

The rugged interlocking steel slats are *heavily* galvanized — with 1.25 ounces of pure zinc per square foot of metal, by ASTM standards.

Then Kinnear's Paint Bond, a special phosphate solution is applied to make sure paint applied later will *cover thoroughly, adhere immediately, and stay on longer.*

That's why Kinnear Rolling Doors cut maintenance costs to the bone, and deliver peak efficiency year after year!

Opening straight upward, Kinnear Rolling Doors coil compactly *out of the way* above the doorway. Materials placed within inches of the face of the door curtain won't hinder its smooth, easy operation. Surrounding floor and wall space is fully usable at all times.

Kinnear Rolling Doors are built to fit openings of any size. Kinnear Motor Operators add the convenience of push-button control, with remote-control switches at any number of points, if desired.

Write for the latest Kinnear Catalog!

No *wonder* users report 30, 40 and 50 years of *efficient, daily* service from

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

The KINNEAR Mfg. Co.
FACTORIES:
3050-70 Fields Ave., Columbus, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in All Principal Cities

NEW Precision made parts are necessary to restore worn shock absorbers to guaranteed dependable performance.

Practical economy-wise maintenance men are taking advantage of our fast reliable service.

All new parts are manufactured by us to obtain the high standards we employ in remanufacturing your shock absorbers. Precision assembling assures dependable performance. We are completely equipped and qualified by experience to render the prompt service you need. Send your worn shocks to us and save dollars.

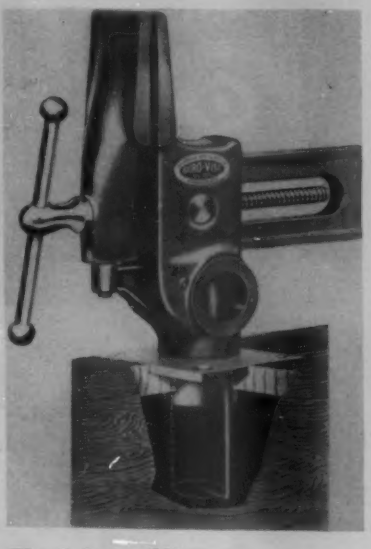
National Transport Supply, Inc.

SHOCK ABSORBER, STARTER DRIVE AND WATER PUMP SERVICE

OFFICE AND PLANT
545 E. HANCOCK DETROIT 1

WHAT'S NEW

Continued from page 97



Flush-base Vise . . .

. . . which drops level with the work surface when not in use is now available.

By loosening a set screw on the side of the base, the post drops down level with the surface. It is held there by a retaining rod.

This base is said to increase the usefulness of the Gyro-Vises. The latter operate from—and rotate around—the base, standing upright or laying flat on either side. They turn in a full circle and lock automatically in any desired position when jaws are tightening. Weight of the flush base is three lbs. It is known as the Gyro-Vise flush base. *The Columbian Vise & Mfg. Co., Cleveland 4, Ohio.*

Hydraulic Jack Oil . . .

. . . with a new low-pour point of —65 deg and including anti-foam action is now on the market.

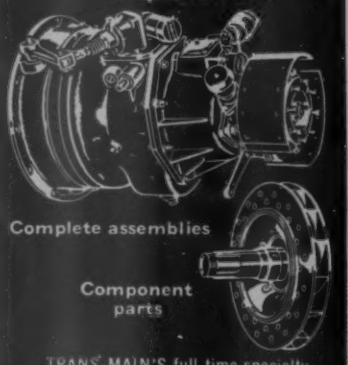
Called RLS, this new oil contains a formula of modern additives which the manufacturer claims prevent rust, improve lubricity for smoother jack operation. It also reduces parts wear, stop sludge formation and prolong oil life. *Blackhawk Mfg. Co., Milwaukee 46, Wisc.*

New Grease Fittings . .

. . . with ball-in-tip design have been made available. The ball in the tip of the fittings keeps out dirt and other foreign matter which would otherwise cause damage to bearings.

Volume flow results from enlarged inner passage which admits more lubricant and helps cut time on other

TRANS-MAIN
. . . transmission reconditioning specialists!



TRANS-MAIN'S full-time specialty is the reconditioning of Spicer Model 916 and 918 transmissions and parts. Only TRANS-MAIN offers top priority for your work . . . 40,000 mile guarantee . . . published price list . . . same-day shipment in emergencies!

Write for your TRANS-MAIN price list today.

TRANS-MAIN
Division, R. D. Fageol Co.
Kent, Ohio
TRANS-MAIN KENT, OHIO

PROTECT REVENUE with Allocated* METAL FARE TOKENS

CHICAGO TRANSIT AUTHORITY CTA

Ideal for multi-fare and fractional fare systems. Attract riders. Speed fare handling. Eliminate change-making delays. Assure accurate sorting, counting and wrapping by maintenance of identical size. An investment . . . not an expense, for they wear indefinitely.

* Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. Perforations and lettering are in the same relative aligned position on every token which makes them identical, thus protecting against duplication. This is especially important with no Federal law protection.

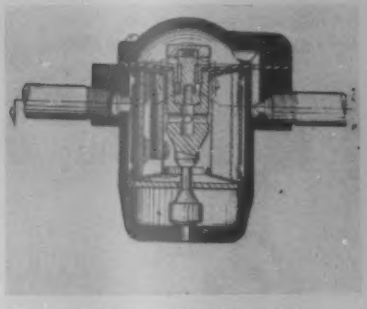
Established 1854

TRANSPORTATION DIVISION

MEYER & WENTHE, Inc.
30 S. Jefferson St., Chicago 6, Ill.

lubricating jobs.

A balanced action spring retracts easily to allow maximum lubricant flow under pressure, yet holds ball firmly in sealing position at all other times. Perfect spherical shape of base allows coupler jaws to form leakproof seal even at a wide angle. *Aro Equipment Corporation, Bryan, Ohio.*



New Adustable Air Filter...

. . . called "EMCO JET" and requiring no manual adjustment is available.

The major parts are made of lightweight aluminum instead of brass. The advantage of the 1¾ lb filter is said to be its point-of-use application, which permits its attachment to most air tools, thus eliminating 98 per cent of the sludge, rust and abrasive substances in their air lines.

The manufacturer states that it is the only fully automatic low-cost filter of its kind. It contains no "O" ring or other parts to wear out. Aluminum parts are treated with a chromate coating to surpass a 100-hour salt water spray test. *Emco Pneumatic Corp., 1317-1319 Locust St., Des Moines, Iowa.*

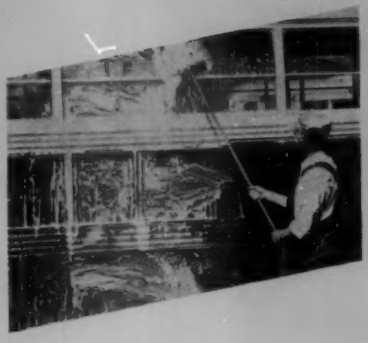
Generator-Welder Combination . . .

. . . weighing just 250 lbs has recently been placed on the market.

Designed as a portable source of ac power, the unit combines the new air cooled Onan 205AJ-IM, 2500 w, 115-v 60-cycle, ac electric generating plant with model 150AJ transformer type welder. The generator-welder combination provides dependable electric power-on-the-spot for weld-

Continued on next page

GET BACK ON THE ROAD FASTER
with Oakite Maintenance Cleaning



Bus Washing

New Foam Unit actually shaves costs way down. Cuts washing time in half. Requires far less detergent.

Transmission Cleaning

Steam-Clean them in less than 5 minutes with the power-packed Oakite Steam-Detergent Gun. Use it, too, on engines, chassis, floors, lifts.

Conditioning Radiators

Open-up clogged radiators in less than 30 minutes. Immerse them in boiling solution of Oakite Stripper.

Parts Cleaning

Specially designed for hot or cold tank, Oakite compounds do a fast, thorough job. And they are economical! Go a long way.

FREE BOOKLET

—4401—describes these and many other shop-proved Oakite maintenance cleaning materials and methods. Write for your copy to Oakite Products, Inc., 16C Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

FREE to Every Shop Operator

- Diesel Compression Testers
- Nozzle Testers for American Bosch, Caterpillar and Bendix Nozzles
- Cummins Injector Tester
- International Harvester Injection Testers
- General Motors Injector Testers
- Injection Pump Calibrating Stands
- Nozzle-Injector Cleaning Tools and Lapping Blocks
- Engine Overhaul Stands
- Engine Removal and Parts Dollies
- GM 71 Engine Tools

76 Pages—275 Illustrations
56 Engine Reference Tables
26 Parts Lists

SEND COUPON NOW

BACHARACH INDUSTRIAL INSTRUMENT CO. • 7301 PENN AVE., PGH., PA.

Send us FREE copy of your Diesel Shop Manual AD54

We are: ☐ Fleet Operators ☐ Injection Service Shop
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NAME_____

COMPANY_____

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AD-15

Pick EARLL

and you... Can't Go Wrong

TROLLEY RETRIEVERS

Transit men have learned from years of use that EARLL Trolley Retrievers and Catchers are needed for better service!

Both the Retriever and Catcher are made with precision accuracy which, combined with built-in ruggedness and strength, make them *efficient* and *economical in operation.*

They function quietly, require a minimum of care and attention, and are long-lasting. For further details, write us today.

FOREIGN AGENTS
INTERNATIONAL GENERAL ELECTRIC CO.
570 LEXINGTON AVE.
NEW YORK 22, N. Y.

CANADIAN DISTRIBUTORS
RAILWAY & POWER ENGINEERING CORPORATION, LTD.
TORONTO, ONT.

C. I. EARLL COMPANY, Inc.

YORK, PA.

WHAT'S NEW

Continued from page 99

ing, operating hand tools or floodlighting the work area.

As a separate unit, the generator or welder may be operated independently of the other . . . disconnect the welder and the generator becomes a portable ac power plant. *Royal Arc Industries, Inc., Chillicothe, Il.*

Improved 30 Ton Press . . .

. . . with horizontal bed channels which extend beyond the upright channels has been announced.

These bed channels form an open throat work area, increasing the scope of jobs the press can handle. The versatility of the unit is increased by window openings in the upright channels accommodating bars and long shafts for straightening or service work.

An adjusting wheel at the top of the frame permits fast adjustments of the bed channels. The adjustable cross head attachment affords full horizontal ram adjustment for off

For your own Protection, **RECOMMEND**

GUARANTEED

Genuine **LAKE** CELLULAR-TUBULAR RADIATOR CORES

The finest replacement cores made for passenger cars, busses, trucks, tractors and industrial equipment.

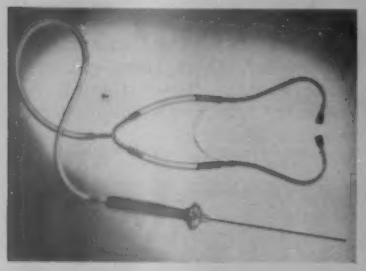
—And for easier, faster radiator repair service also use Lake Shop Tools and Supplies. Write for free Supply Catalog today!

Our latest Core Catalog includes 1952, 1953 and 1954 models.

LAKE AUTO RADIATOR

5005 Euclid Avenue • Cleveland 3, Ohio
Branch — 2115 E. 25th St. • Los Angeles 58, Calif.

center jobs. *Owatonna Tool Company, 339 North Cedar Street, Owatonna, Minn.*

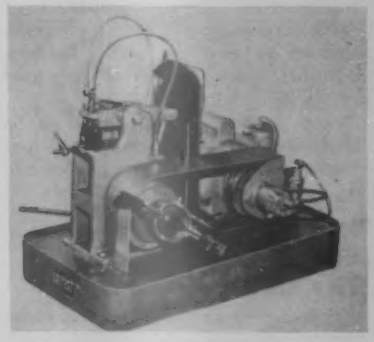


Re-Designed Multiscope . . .

. . . that is 39.4 per cent more sensitive has recently been developed.

The Multiscope operates like a doctor's stethoscope and has a seven-inch-long probe. It also has more sensitive diaphragm than the former model.

The new model pinpoints noise sources and is said to save hours in locating and analyzing such conditions as worn gears, and bearings, loose pulleys, piston slap and leaky valves. The Multiscope has no electrical connections, and is positive in operation. *Herbrand Tools, Fremont, Ohio.*



Diesel Fuel Testing Unit . . .

. . for injector calibrating and running-in is now on the market.

The new unit is electric motor driven, with a clutch throw-out of the camshaft drive. A locking lever positions the injector to be calibrated and run in, and automatically connects the fuel and overflow lines. The fuel is stored in the base, and passes through both a strainer and final stage filter between the primary pump, which is directly connected to the motor, and the injector.

Calibrating mechanism consists of a standard graduate glass, and a timer that permits continuous identical calibrating runs. It is claimed that use of this unit eliminates the chance of putting back into service an in-

Continued on next page

COMPARE! COSTS ⅓ LESS

this steam cleaner saves hard cash on dozens of tough maintenance jobs

You'll save HUNDREDS—of dollars and man-hours—with a Vapor Upgrader Jr. Steam Cleaner. Its initial cost is one-third lower than comparable machines. Compact, portable. One man and the Upgrader Jr. can do 95% of all steam-cleaning jobs is less time, at lowest cost. Pressures up to 125 p.s.i. Controllable output, 100 g.p.h. It's safe, simple—easy to transport, to use. Write today.

VAPOR HEATING CORPORATION

Also manufacturers of high-volume, forced-air WAIKIKI Heaters

80 E. Jackson Boulevard, Chicago 4, Illinois

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Please send me free new Bulletin on:

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Select the right clamp for your job

GRAND *Speed* CLAMPS

Quickcet Trigger Control Series Proof Tested for Light, Medium & Heavy Duty Service

SEND FOR COMPLETE CATALOG AND DETAILS ON 10 DAY FREE TRIAL DEMONSTRATION PLAN

OVER A MILLION USERS First Choice for Welders & Machinists since 1921

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MOTO GARD WILL HELP YOU CUT REPAIR BILLS REDUCE ROAD FAILURES

A Moto Gard installed on your vehicle will protect your motor against damage from an oil failure or overheating. It automatically stops the motor ahead of any damage if the oil pressure runs too low or the motor gets too hot. Moto Gard is guaranteed to work satisfactory or your money back.

REASONABLY PRICED . . . EASILY INSTALLED

Full Information on Request

"Don't Buy Motors—Buy Moto-Gard"

THE MOTO-GARD COMPANY

Box 2425

Raleigh, North Carolina

WHAT'S NEW

Continued from page 101

jector which does not equal the fuel delivery of others being put in the same engine. *Diesel Control Corporation, 226 N. Marine Ave., Wilmington, Del.*

Low-Cost Growler . . .

. . . known as Model G-219, is now available. The new growler is equipped with a meter and test prods for measuring armature output, and for checking shorts, grounds, high resistance or incorrect number of turns on automotive armatures. It is claimed to also test brush holders, terminal posts and generator field windings for electrical losses.

The growler jaws are said to be adequate for both generator and starter armatures. *King Electric Equipment Co., Cleveland, Ohio.*

Rubber-Cushioned Tire Chain . . .

. . . featuring snap-on, snap-off cross chains has been announced.

Called the Ruggo Tire Chain, the rubber-cushioned double-traction, tire chain fits any heavy duty vehicle. The rubber roller acts as a cushion for the chain, prevents damage to the tire, and holds the cross chain on the hook. Resiliency of the rubber roller permits easy removal of the cross chain, even when on the tire.

A double hook attaches permanently to the side chain. The head of the double hook and the hook on the rubber roller assembly swivel as the cross chain turns. The cross chains snap on and off without tools, alternately turn, then dig in for more traction, and turn automatically for more mileage with less breakage. For additional information on the new rubber-cushioned tire chain write *The Thomas Company, 1645 Hennepin Ave., Minneapolis, Minn.*

EVERY 2 WEEKS,* USERS OF OTHER FARE BOXES SWITCH TO *Grants!*

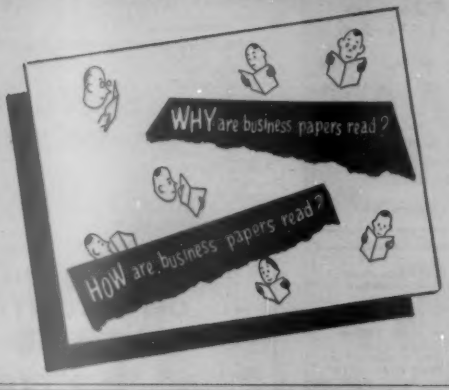
*Average over a period of years

WOULD YOU LIKE TO KNOW THE REASON? WRITE, WIRE OR PHONE TODAY

THE TRANSIT INDUSTRY CONTINUES TO BUY MORE *Grant* FARE BOXES THAN ALL OTHER MAKES COMBINED — BY A BIG MARGIN!

Grant MONEY-METERS CO.
1117 Douglas Ave., Providence 4, R.I., U.S.A.

WIRE, PHONE OR WRITE FOR FACTS ON:
Registering Machines
Lock Box Machines
Registering-Lock Box Machines
Ticket-Coin Machines
Registering-Ticket Machines



A copy of this quick-reading, 8-page booklet is yours for the asking. It contains many facts on the benefits derived from your business paper and tips on how to read more profitably. Write for the "WHY and HOW booklet."

McGraw-Hill Publishing Company, Room 2710, 330 West 42nd St., New York 36, N.Y.

WHERE TO BUY

Specialties and Services for economical operation and maintenance of buses

STOLEN FARES?

By operators "knocking down" or by passengers "stealing rides." Practical Perey Turnstile Systems efficiently get more fares.

Install **PEREY TURNSTILES**
106 EAST 41st ST., NEW YORK 17, N.Y.

This Where TO BUY Section
supplements other advertising in this issue with these additional announcements of products and services essential to efficient and economical operation and maintenance in bus transportation.
BUS TRANSPORTATION

Send for Samples
DECALS PLASTIC BRILLIANT TOUGH
MADE TO YOUR SPECIFICATIONS
ALLIED DECALS (IND.) 9336 HOUGH AVE. CLEVELAND 3, OHIO

Traveling BILLBOARDS

Bring New Revenue... Better Results

CASH IN *now* on these "JUMBO" Change-Ad Carriers

Masonite AD-PANELS are changed in a jiffy. All sizes. Write for literature, prices. FREE Picture Album sent on request. No obligation.

THE YARDER MFG. CO. 716 Phillips Avenue TOLEDO 12, OHIO

BOWERS BATTERIES
Always Better
BOWERS BATTERY & SPARK PLUG CO., READING, PA.

BUS AGENTS
U.S.A.—CANADA—ALASKA
MEXICO
SCHEDULE INFORMATION CORRECTED MONTHLY
Russell's Official National Motor Coach Guide
$12.50 per year, 12 issues—
Published by
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Cedar Rapids, Iowa

BUS SEATS
Complete line of recliner seats
- CITY SERVICE
- METROPOLITAN
- SCHOOL BUS SEATS

All other types made to your specifications
ALL WORK GUARANTEED
For full details & prices call or write
AMERICAN WICKER WORKS
H. A. Gass
1316-B Harmon Pl., Minneapolis 3, Minn.

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UNDISPLAYED RATE:
$1.20 a line, minimum 3 lines. To figure advance payment, count 5 average words as a line.
POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
DISCOUNT of 10% if full payment is made in advance of four consecutive insertions of undisplayed ads.

INFORMATION:
BOX NUMBERS count as one additional line in undisplayed ads.
EQUIPMENT WANTED OR FOR SALE acceptable only in Displayed Style.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. B.T.

DISPLAYED RATE:
The advertising rate is $9.50 per inch for Equipment & Business opportunity advertising appearing on other than a contract basis. Contract rates quoted on request.

EMPLOYMENT OPPORTUNITIES—$12.50 per inch. Subject to agency commission.

SEE NEW ADVERTISEMENTS: Address New York Office, 330 W. 42nd Street, New York 36, N. Y., for March issue closing February 22nd.

GOOD USED BUSES FOR SALE AT LOW PRICES

BUY NOW AND SAVE MONEY

GAS—DIESEL—SUBURBANS—CITY TYPE—PARLOR

1945 GMC Diesel, PDA 3702, Reclining, 37 Pass.
1945 GMC Diesel, PDA 3702, Reclining, 41 Pass.
1949 GMC Diesel, PD 4101, Parlor 41 or 45.
1950 GMC Diesel, PD 4101, Parlor 41 or 45.
1951 GMC Diesel, PD 4103, Parlor 41 or 45.
1947 ACF Gas, C36, City Type Hall Scott, 39 Pass.
1947 ACF Gas, C44, City Type Hall Scott, 43 Pass.
1947 ACF Gas, IC41, Parlor Hall Scott, 41 Pass.
1950 ACF Diesel, IC41 Parlor Cummins, 41 Reclining. Full Silver Sided.
1946 to 1951 Aero Coaches, 37 Pass. Reclining Seats, Red Diamond and Continental Motors. Some are Silver Sided.
1946 to 1951 Fixibles, 29, 33, 37 Pass. Buick and GMC Diesel.
1947 Mack Gas, Suburban, Mohair Seats, 41 Pass.
1947 Whites Gas, City Type, 44 Pass. Leather & Mohair Seats.

For complete information write

FS9257 BUS TRANSPORTATION
330 W. 42nd St., New York 36, N. Y.

WANTED TO PURCHASE:

National Bus Registers, also other office machinery. Any condition, give prices.

DAVID WEISWASSER
155 No. 3rd Street
Philadelphia 6, Pa.
Telephone: Lombard 3-3141

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Advertising or Your Inquiries to Advertising Will Have Special Value.

USED BUSES
1—1952 61 passenger, Superior Pusher
1—1953 Ford Superior 48 pass.
3—Superior Pushers, 1—47 pass., 2—53 pass.
3—Ford Superior body, 1—43 pass., 2—49 pass.
1—White Penn Yan body, 55 passenger.
1—Mack Penn Yan body, 49 passenger.
Two Buick powered Fixibles, 25 & 29 pass.
One red diamond Aerocoach, 35 pass.
GENESEE BUS LINES, 597 Main St., East Aurora, N. Y., Phone 500

FOR SALE

2—1948 Kalamazoo Cruisers, 29 passenger
2—1947 GMC 2904 Gas, 29 Passenger
2—1947 Aerocoach P-37 Gas, 37 Passenger

All coaches maintained by a "ME" award winner, and are extra clean, complete, and ready to run.

Peoples Rapid Transit Corporation
235 Cooley Street
Kalamazoo, Michigan
Ph. 3-5721

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Getting 350,000 miles between overhauls, as this bus operator does on some equipment, requires close attention to the PM program—and the use of a motor oil that will stand up to such severe service. STANOLUBE HD-M Motor Oil delivers this kind of service—with plenty to spare. The stop and go of bus operations in all types of weather promotes oil oxidation and the formation of varnish, sludge and carbon-like deposits on engine parts. STANOLUBE HD-M's high quality base stock and additive formula render it impervious to oxidation even under the most severe operations. Detergent-dispersant properties keep engine parts free of deposits.

At the same time STANOLUBE HD-M Motor Oil provides Chicago & West Towns with another important advantage. By using this one motor oil for both gasoline and diesel equipment the bus company has cut inventories, saved on storage facilities and space and eliminated chances for application mistakes.

STANOLUBE HD-M Motor Oil can help you get better performance for your equipment just as it is doing for Chicago & West Towns. Find out. A Standard Oil automotive lubrication specialist is nearby in any of the 15 Midwest and Rocky Mountain states. Call him. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Quick Facts About
STANOLUBE HD-M Motor Oil

1. **STANOLUBE HD-M Motor Oil is refined from high quality, solvent extracted base stocks.**
2. **STANOLUBE HD-M contains specialized additives that prevent bearing corrosion, reduce piston varnish and keep rings free to seal against blow-by.**
3. **STANOLUBE HD-M contains still other additives that reduce wear and prevent damage to cams and tappets and other heavily stressed parts.**

STANDARD

STANDARD OIL COMPANY
(Indiana)